

(FILE 'HOME' ENTERED AT 14:21:00 ON 30 JUN 2008)

FILE 'REGISTRY' ENTERED AT 14:21:32 ON 30 JUN 2008

L1 375 S LI AND MN AND NI AND CO AND (V OR AL OR MG OR CR OR TI OR CU

FILE 'CAPLUS' ENTERED AT 14:22:36 ON 30 JUN 2008

L2 116 S L1

L3 113 S L2 AND BATTERY

=> d 1-113 ibib ti it abs

L3 ANSWER 1 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2008:441499 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 148:430069  
TITLE: Blended mixed oxide cathodes for secondary  
batteries and the secondary batteries  
INVENTOR(S): Sho, Masaaki; Noguchi, Takehiro; Numata, Tatsuji  
PATENT ASSIGNEE(S): NEC Tokin Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 18pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008084743	A	20080410	JP 2006-264739	20060928
PRIORITY APPLN. INFO.:			JP 2006-264739	20060928
TI Blended mixed oxide cathodes for secondary batteries and the secondary batteries				
IT Battery cathodes				
Secondary batteries (secondary batteries with Li Co Mn mixed oxide mixture cathodes)				
IT 193215-97-3, Cobalt lithium manganese nickel oxide (Co0.25LiMn0.4Ni0.35O2) 467253-79-8, Cobalt lithium manganese nickel oxide (Co0.35LiMn0.25Ni0.402) 532934-38-6, Cobalt lithium manganese nickel oxide (Co0.34LiMn0.33Ni0.33O2) 1013625-43-8, Aluminum cobalt lithium manganese oxide (Al0.03Co0.03Li1.05Mn1.89O4) 1013625-47-2, Aluminum cobalt lithium manganese oxide (Al0.07Co0.07Li1.1Mn1.76O4) 1013625-70-1 1017558-73-4 1017558-76-7 1017558-79-0, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.35Ni0.25O2) 1017558-86-9 1017558-90-5 1017558-93-8				
RL: TEM (Technical or engineered material use); USES (Uses) (secondary batteries with Li Co Mn mixed oxide mixture cathodes)				
AB The title cathode contains (A) $L1+xMn2-x-y-z-wAl_yCo_zMg_wO_4$ ( $0.03 < x < 0.25$ ; $0.01 < y < 0.2$ ; $0.01 < z < 0.2$ ; $0 \leq w < 0.1$ ; $x + y + z + w < 0.4$ ) and (B) $L1+a(Ni1-p-q-rCo_pMn_qMe_r)O_4$ ( $Me = Mg, Al, Fe, Cr, Ti$ , and/or $In$ ; $0 \leq a < 0.1$ ; $0.2 < p < 0.45$ ; $0.2 < q < 0.45$ ; $0 \leq r < 0.15$ ). Preferably, A is spinel-structured and/or B is layer-structured. Secondary batteries having the above stated cathodes are also claimed. The batteries show high performance for long period.				
L3 ANSWER 2 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN ACCESSION NUMBER: 2007:1362190 CAPLUS <<LOGINID::20080630>> DOCUMENT NUMBER: 148:508771 TITLE: Synthesis and characterization of metal (Fe, Al or Mg) doped Li[Ni1/3Mn1/3Co1/3]O2 particle by ultrasonic				

AUTHOR(S): spray pyrolysis  
Myoujin, Kenichi; Ogihara, Takashi; Nakane, Koji;  
Ogata, Nobuo

CORPORATE SOURCE: University of Fukui, 9-1 Bunkyo 3, Fukui-shi, Fukui,  
910-8507, Japan

SOURCE: Transactions of the Materials Research Society of  
Japan (2007), 32(3), 717-720

CODEN: TMRJE3; ISSN: 1382-3469

PUBLISHER: Materials Research Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

TI Synthesis and characterization of metal (Fe, Al or Mg) doped  
Li[Ni1/3Mn1/3Co1/3]O2 particle by ultrasonic spray pyrolysis

IT Secondary batteries  
(lithium; synthesis and characterization of Fe, Al, Mg doped cobalt  
lithium manganese oxide powder by ultrasonic spray pyrolysis)

IT Crystal structure

Particle size

Surface area

Surface structure

Thermal decomposition  
(synthesis and characterization of Fe, Al, Mg doped cobalt lithium  
manganese oxide powder by ultrasonic spray pyrolysis)

IT 1021525-46-1

RL: MSC (Miscellaneous)  
(synthesis and characterization of Fe, Al, Mg doped cobalt lithium  
manganese oxide powder by ultrasonic spray pyrolysis)

IT 346417-97-8P, Cobalt lithium manganese nickel oxide  
(Co0.33LiMn0.33Ni0.33O2) 1021525-38-1P 1021525-39-2P 1021525-40-5P  
1021525-42-7P 1021525-43-8P 1021525-44-9P  
1021525-45-0P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(synthesis and characterization of Fe, Al, Mg doped cobalt lithium  
manganese oxide powder by ultrasonic spray pyrolysis)

AB Spherical metal (Fe, Al or Mg) doped Li[Ni1/3Mn1/3Co1/3]O2 precursor  
powders were synthesized by ultrasonic spray pyrolysis using aqueous solution  
of metal nitrate. XRD, SEM and BET anal. were used for determination of the  
composition, morphol., particle size and surface area. SEM observation showed that the  
size of as-prepared particles were .apprx.0.9  $\mu$ m with narrow size  
distribution. The crystal phase of metal (Fe, Al or Mg) doped  
Li[Ni1/3Mn1/3Co1/3]O2 was resulted in layered rock salt structure with  
R.hivin.3m space group after calcinations at 1023 K, 10 h. No  
impurity-related peaks are observed from the XRD pattern with various doping  
metals. Mg and Al doped Li[Ni1/3Co1/3Mn1/3]O2 showed a very good cycling  
stability. The Mg substitution for Ni led to the most excellent results.  
However, the capacity fading on cycling was observed for Fe(5%, substitution  
for Mn) and Mg(30%, substitution for Co and Mn) doped Li  
(Ni1/3Co1/3Mn1/3)O2.

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 3 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:1146179 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 147:452241

TITLE: Method of preparing cathode active material for  
lithium battery

INVENTOR(S): Sun, Yang-Kook; Park, Byung-Chun

PATENT ASSIGNEE(S): Industry-University Cooperation Foundation Hanyang  
University, S. Korea

SOURCE: PCT Int. Appl., 56pp.  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007114557	A1	20071011	WO 2006-KR5767	20061227
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
KR 2007097923	A	20071005	KR 2006-28861	20060330
KR 822012	B1	20080414		

PRIORITY APPLN. INFO.: KR 2006-28861 A 20060330

TI Method of preparing cathode active material for lithium battery

IT Secondary batteries  
(lithium; method of preparing cathode active material for lithium battery)

IT Battery cathodes  
(method of preparing cathode active material for lithium battery  
)

IT 146956-42-5P, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.2Ni0.402)  
179802-95-0P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.1Ni0.802)  
193215-53-1P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.502)  
270918-91-7P 459408-76-5P, Cobalt lithium manganese nickel oxide  
(Co0.05LiMn0.48Ni0.48O2) 952209-16-4P, Cobalt lithium manganese nickel oxide  
(Co0.13LiMn0.07Ni0.802) 952209-18-6P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(method of preparing cathode active material for lithium battery  
)

AB A pos. active material according to one embodiment of the present invention includes an internal bulk part and an external bulk part surrounding the internal bulk part and has a continuous concentration gradient of the metal composition from an interface between the internal bulk part and the external bulk part to the surface of the active material. The provided pos. active material in which the metal composition is distributed in a continuous concentration gradient has excellent electrochem. characteristics such as a cycle life, capacity, and thermal stability.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 4 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:1120922 CAPLUS <>LOGINID::20080630>>

DOCUMENT NUMBER: 147:430313

TITLE: Cathode materials for lithium secondary batteries with non-aqueous electrolytes

INVENTOR(S): Abe, Isao; Matsumoto, Satoshi; Tsutsumi, Shuji;

Takeuchi, Takashi  
 PATENT ASSIGNEE(S): Sumitomo Metal Mining Co., Ltd., Japan; Matsushita  
 Electric Industrial Co., Ltd.  
 SOURCE: U.S. Pat. Appl. Publ., 16pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070231694	A1	20071004	US 2007-727410	20070326
JP 2007273106	A	20071018	JP 2006-93659	20060330
CN 101047246	A	20071003	CN 2007-10090083	20070326
KR 2007098562	A	20071005	KR 2007-29188	20070326
PRIORITY APPLN. INFO.:			JP 2006-93659	A 20060330
TI Cathode materials for lithium secondary batteries with non-aqueous electrolytes				
IT Battery cathodes				
Secondary batteries (cathode materials for lithium secondary batteries with non-aqueous electrolytes)				
IT Carbon black, uses				
Fluoropolymers, uses				
RL: TEM (Technical or engineered material use); USES (Uses) (cathode materials for lithium secondary batteries with non-aqueous electrolytes)				
IT 209908-08-7P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.15LiNi0.8202) 473701-51-8P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.15Li1.02Ni0.8202) 951656-94-3P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.16Li1.02Ni0.8102) 951656-95-4P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.14Li1.02Ni0.8302) 951656-96-5P 951656-97-6P 951656-98-7P 951656-99-8P, Aluminum lithium nickel oxide (Al0.01Li1.02Ni0.9902) 951657-00-4P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.47Li1.02Ni0.502) 951663-36-8P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.15Li1.1Ni0.8202) RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (cathode materials for lithium secondary batteries with non-aqueous electrolytes)				
IT 872-50-4, N-Methylpyrrolidone, uses 7429-90-5, Aluminum, uses 24937-79-9, Polyvinylidene fluoride				
RL: TEM (Technical or engineered material use); USES (Uses) (cathode materials for lithium secondary batteries with non-aqueous electrolytes)				
IT 1313-99-1, Nickel oxide, processes 11113-74-9, Nickel hydroxide RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process) (in preparation of cathode materials for lithium secondary batteries with non-aqueous electrolytes)				
IT 1310-66-3, Lithium hydroxide monohydrate 1310-73-2, Sodium hydroxide, processes 7664-41-7, Ammonia, processes 7681-52-9, Sodium hypochlorite 10026-24-1 10034-99-8, Magnesium sulfate heptahydrate 10043-01-3, Aluminum sulfate 10101-97-0, Nickel sulfate hexahydrate 13465-27-5, Manganese sulfate pentahydrate RL: PEP (Physical, engineering or chemical process); PROC (Process) (in preparation of cathode materials for lithium secondary batteries with non-aqueous electrolytes)				
AB This cathode material consists of a Li/Ni composite oxide with high capacity, low cost, good heat stability and good safety in nonaq.				

electrolyte-based secondary batteries. The Li/Ni composite oxide powder is obtained by H<sub>2</sub>O washing fired powders described by LiNi<sub>1-a</sub>M<sub>a</sub>O<sub>2</sub>, followed by filtering and drying. In the formula, M represents a transition metal other than Ni, group 2 elements, or group 13 elements and 0.01≤a≤0.5. The sp. surface area of the Li/Ni composite oxide powders after H<sub>2</sub>O washing is 0.3 to 2.0 m<sup>2</sup>/g.

L3 ANSWER 5 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 20071120466 CAPLUS <LOGINID::20080630>  
DOCUMENT NUMBER: 147:430306  
TITLE: Cathode active material for nonaqueous electrolyte-based secondary battery and production method therefor  
INVENTOR(S): Abe, Isao; Matsumoto, Satoshi; Tsutsumi, Shuji; Takeuchi, Takashi  
PATENT ASSIGNEE(S): Sumitomo Metal Mining Co., Ltd., Japan; Matsushita Electric Industrial Co., Ltd.  
SOURCE: U.S. Pat. Appl. Publ., 18pp.  
CODEN: USXECO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070231691	A1	20071004	US 2007-727389	20070326
JP 2007273108	A	20071018	JP 2006-93698	20060330
CN 101047247	A	20071003	CN 2007-10090085	20070326
KR 2007098564	A	20071005	KR 2007-29239	20070326
PRIORITY APPLN. INFO.:			JP 2006-93698	A 20060330
TI	Cathode active material for nonaqueous electrolyte-based secondary battery and production method therefor			
IT	Battery cathodes Secondary batteries (cathode active material for nonaq. electrolyte-based secondary battery and production method therefor)			
IT	11113-74-9, Nickel hydroxide 12026-04-9, Nickel hydroxide oxide niooh RL: RCT (Reactant); RACT (Reactant or reagent) (cathode active material for nonaq. electrolyte-based secondary battery and production method therefor)			
IT	473701-51-8P, Aluminum cobalt lithium nickel oxide (A10.03Co0.15Li1.02Ni0.8202) 951656-94-3P, Aluminum cobalt lithium nickel oxide (A10.03Co0.16Li1.02Ni0.8102) 951656-95-4P, Aluminum cobalt lithium nickel oxide (A10.03Co0.14Li1.02Ni0.8302) 951656-96-5P 951656-97-6P 951656-98-7P 951656-99-8P, Aluminum lithium nickel oxide (A10.01Li1.02Ni0.9902) 951657-00-4P, Aluminum cobalt lithium nickel oxide (A10.03Co0.47Li1.02Ni0.502) RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (cathode active material for nonaq. electrolyte-based secondary battery and production method therefor)			
AB	(b) The present invention provides a pos. electrode active material for a non-aqueous electrolyte-based secondary battery, composed of a lithium/nickel composite oxide with high capacity, low cost and excellent heat stability, an industrially suitable production method therefor, and a high safety non-aqueous electrolyte-based secondary battery. A lithium/nickel composite oxide is produced by the following steps (a) to (c): (a) nickel hydroxide or nickel oxyhydroxide having a specified component is prepared at a temperature of 600 to 1100°, under air atmospheric			

fired powders are prepared after mixing the nickel oxide and a lithium compound, and then by firing at a maximal temperature range of 650 to 850°, under oxygen atmospheric (c) obtained fired powders are washed with water within

a time satisfying the following equation: A<B/40 and then filtered and dried. A represents washing time represented by unit of minute and B represents slurry concentration represented by unit of g/L.

L3 ANSWER 6 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:1109486 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 147:409779  
TITLE: Lithium nickel manganese oxide cathodes for lithium ion batteries  
INVENTOR(S): Ito, Takanori; Nagayama, Rin  
PATENT ASSIGNEE(S): Nissan Motor Co., Ltd., Japan  
Jpn. Kokai Tokkyo Koho, 35pp.  
SOURCE: CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007257890	A	20071004	JP 2006-77575	20060320
PRIORITY APPLN. INFO.:			JP 2006-77575	20060320
TI	Lithium nickel manganese oxide cathodes for lithium ion batteries			
IT	Battery cathodes			
	Secondary batteries			
	(lithium nickel manganese oxide cathodes for lithium ion batteries)			
IT	950904-33-3P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402.06)	950904-34-4P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402.1)	950904-36-6P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402.2)	950904-38-8P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402.3)
	950904-41-3P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402.4)	950904-43-5P 950904-46-8P 950904-49-1P	950904-49-1P	950904-50-6P
	950904-52-6P 950904-55-9P	950904-57-1P	950904-60-6P	
	950904-63-9P 950904-66-2P	950904-69-5P	950904-72-0P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.28Ni0.402)	950904-75-3P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.27Ni0.402)
RL; IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)	(cathodes; lithium nickel manganese oxide cathodes for lithium ion batteries)			
AB	The cathodes show manganese average valence number $\geq 3.2$ at a depth 5 times the c-axis length from the surfaces of primary particles. The cathodes may be represented by, at initial state before charging and discharging, $\text{Li}_x\text{Ni}_y\text{Mn}_z\text{Co}_a\text{Mn}_b\text{O}_c\text{-dA}_d$ [M = alkali metal (excluding Li), alkaline earth metal, transition metal (excluding Ni, Mn, Co), aluminum; A = chalcogen (excluding O), N, P, halo; $0.5 < x \leq 1.1$ ; $y = 0.3-0.7$ ; $z = 0.3-0.7$ ; $a = 0.0-0.4$ ; $b = 0.0-0.2$ ; $c = 1.8-2.4$ ; $d = 0.0-0.2$ ]. The cathodes do not elute into electrolytes and precipitate on anodes even in high-temperature storage or charge-discharge cycling, and provide durable high discharge capacity.			

L3 ANSWER 7 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:816524 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 147:193088  
TITLE: Secondary nonaqueous-electrolyte batteries

INVENTOR(S): with cathodes containing manganese mixed oxides  
 Inaba, Yukishige; Kita, Yosuke; Minetani, Kunihiko;  
 Yao, Takeshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 27pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007188703	A	20070726	JP 2006-4515	20060112
PRIORITY APPLN. INFO.:			JP 2006-4515	20060112
TI Secondary nonaqueous-electrolyte batteries with cathodes containing manganese mixed oxides				
IT Secondary batteries (lithium; secondary nonaq.-electrolyte batteries with cathodes containing manganese mixed oxides)				
IT Battery cathodes	Battery electrolytes (secondary nonaq.-electrolyte batteries with cathodes containing manganese mixed oxides)			
IT 944256-99-9, Cobalt lithium manganese nickel oxide (Co0.33Li0.9-1.2Mn0.3Ni0.33O2) 944257-02-7, Cobalt lithium manganese nickel oxide (Co0.2Li0.9-1.2Mn0.3Ni0.502) 944257-04-9, Cobalt lithium manganese nickel oxide (Co0.5Li0.9-1.2Mn0.3Ni0.202) 944257-06-1, Cobalt lithium manganese nickel oxide (Co0.2Li0.9-1.2Mn0.5Ni0.302) 944257-08-3, Cobalt lithium manganese nickel oxide (Co0.4Li0.9-1.2Mn0.2Ni0.402) 944257-10-7, Lithium magnesium manganese nickel oxide (Li0.9-1.2Mg0.33Mn0.33Ni0.33O2) 944257-11-8, Aluminum lithium manganese nickel oxide (Al0.33Li0.9-1.2Mn0.33Ni0.33O2) 944257-12-9, Lithium manganese nickel titanium oxide (Li0.9-1.2Mn0.33Ni0.33Ti0.33O2) 944257-13-0, Lithium manganese nickel vanadium oxide (Li0.9-1.2Mn0.33Ni0.33V0.33O2) 944257-14-1 944257-15-2 944257-16-3, Cobalt lithium oxide (CoLi0.9-1.2O2) 944257-17-4, Cobalt lithium magnesium oxide (Co0.98Li0.9-1.2Mg0.02O2) 944257-18-5, Cobalt lithium magnesium oxide (Co0.9Li0.9-1.2Mg0.102) 944257-19-6, Aluminum cobalt lithium oxide (Al0.02Co0.98Li0.9-1.2O2) 944257-20-9, Cobalt lithium titanium oxide (Co0.98Li0.9-1.2Ti0.02O2) 944257-21-0, Cobalt lithium manganese oxide (Co0.98Li0.9-1.2Mn0.02O2) 944257-22-1, Cobalt lithium nickel oxide (Co0.98Li0.9-1.2Ni0.02O2) 944257-23-2, Cobalt lithium vanadium oxide (Co0.98Li0.9-1.2V0.02O2) 944257-24-3, Cobalt lithium molybdenum oxide (Co0.98Li0.9-1.2Mo0.02O2) 944257-25-4, Cobalt lithium magnesium oxide (Co0.97Li0.9-1.2Mg0.02O2) RL: TEM (Technical or engineered material use); USES (Uses) (cathodes; secondary nonaq.-electrolyte batteries with cathodes containing manganese mixed oxides)				
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Di-n-propylcarbonate 4437-85-8, Butylene carbonate 35363-39-4 35363-40-7, uses 51729-83-0 56525-42-9, uses RL: TEM (Technical or engineered material use); USES (Uses) (electrolyte solvents; secondary nonaq.-electrolyte batteries with cathodes containing manganese mixed oxides)				
IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethylsulfonyl)imide 132404-42-3, Lithium tris(trifluoromethylsulfonyl)methanide 132843-44-8, Lithium bis(perfluoroethylsulfonyl)imide				

- RL: TEM (Technical or engineered material use); USES (Uses)  
(electrolytes; secondary nonaq.-electrolyte batteries with  
cathodes containing manganese mixed oxides)
- AB The title battery is equipped with cathode active mass containing  
 $\text{Li}_{x}\text{CoO}_2$  ( $x = 0.9\text{--}1.2$ ) and  $\text{Li}_{y}\text{Ni}_y\text{Mn}_{1-y}\text{Zn}_2$  ( $x = 0.9\text{--}1.2$ ;  $y = 0.1\text{--}0.5$ ;  $z = 0.2\text{--}0.5$ ;  $1 - y - z = 0.2\text{--}0.5$ ;  $y/z = 0.9\text{--}3.0$ ; M = Co, Mg, Al, Ti, Sr, Ca, V, Fe, Y, Zr, Mo, Tc, Ru, Ta, W, and/or Re) and a nonaq. electrolyte solution containing a cyclic carbonate, chain carbonate, and a Li salt. Alternatively, the battery is equipped with cathode active mass containing the  $\text{Li}_{y}\text{Ni}_y\text{Mn}_{1-y}\text{Zn}_2$  and  $\text{Li}_{x}\text{Co}_{1-y}\text{Mn}_y\text{O}_2$  ( $x = 0.9\text{--}1.2$ ;  $y = 0.005\text{--}0.1$ ; M = Mg, Al, Ti, Sr, Mn, Ni, Ca, V, Fe, Y, Zr, Mo, Tc, Ru, Ta, W, Re, Yb, Cu, Zn, and/or Ba) and the above nonaq. electrolyte solution. The battery provides excellent high-temperature storage stability and low material cost.
- L3 ANSWER 8 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:768777 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 1481:588948  
TITLE: Structural and electrochemical properties of  
 $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ - $\text{LiMg}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$  solid  
solutions. [Erratum to document cited in CA148:520534]  
AUTHOR(S): Fujii, Yasuhiro; Miura, Hiroshi; Suzuki, Naoto; Shoji, Takayuki; Nakayama, Noriaki  
CORPORATE SOURCE: Tosoh Co., Ltd., 4560 Kaisei-cho, Syunan, Yamaguchi,  
746-8501, Japan  
SOURCE: Solid State Ionics (2007), 178(15-18), 1169  
CODEN: SSIOD3; ISSN: 0167-2738  
PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
TI Structural and electrochemical properties of  $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ -  
 $\text{LiMg}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$  solid solutions. [Erratum to document cited in  
CA148:520534]  
IT Secondary batteries  
(lithium; structural and electrochem. properties of metal oxide solid  
solns. (Erratum))  
IT Open circuit potential  
Redox potential  
Solid solutions  
Stoichiometry  
(structural and electrochem. properties of metal oxide solid solns.  
(Erratum))  
IT 346417-97-8, Cobalt lithium manganese nickel oxide  
( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$ ) 493326-93-5, Cobalt lithium manganese nickel  
oxide ( $\text{Co}_{0.33}\text{LiMn}_{0.34}\text{Ni}_{0.33}\text{O}_2$ ) 856700-33-9, Cobalt lithium manganese  
nickel oxide ( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.34}\text{O}_2$ ) 932745-06-7, Cobalt lithium  
magnesium manganese oxide ( $\text{Co}_{0.33}\text{LiMg}_{0.33}\text{Mn}_{0.33}\text{O}_2$ ) 1022913-74-1  
1022913-75-2 1022913-76-3 1022913-77-4, Cobalt lithium  
magnesium manganese oxide ( $\text{Co}_{0.33}\text{LiMg}_{0.34}\text{Mn}_{0.33}\text{O}_2$ ) 1022913-78-5  
1022913-79-6, Cobalt lithium magnesium manganese oxide  
( $\text{Co}_{0.33}\text{Li}_{1.0}\text{Mg}_{0.33}\text{Mn}_{0.34}\text{O}_2$ )  
RL: TEM (Technical or engineered material use); USES (Uses)  
(structural and electrochem. properties of metal oxide solid solns.  
(Erratum))  
AB On page 856, the unit measurement "mAh g<sup>-1</sup>" appears incorrectly under the  
section heading 3.5 Electrochem. properties.
- L3 ANSWER 9 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:703908 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 1471:121879  
TITLE: Carbon nanotube with silicon nanoparticle films as  
anodes for secondary lithium batteries

INVENTOR(S): Patoux, Sebastien; Le Cras, Frederic  
 PATENT ASSIGNEE(S): Commissariat A L'Energie Atomique, Fr.  
 SOURCE: PCT Int. Appl., 29pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007071778	A1	20070628	WO 2006-EP70121	20061221
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
FR 2895572	A1	20070629	FR 2005-13261	20051223
FR 2895572	B1	20080215		
PRIORITY APPLN. INFO.:			FR 2005-13261	A 20051223
TI Carbon nanotube with silicon nanoparticle films as anodes for secondary lithium batteries				
IT Polar solvents (aprotic, nonaq. battery electrolytes containing; carbon nanotube with silicon nanoparticle films as anodes for secondary lithium batteries)				
IT Battery anodes Battery cathodes (carbon nanotube with silicon nanoparticle films as anodes for secondary lithium batteries)				
IT Nanotubes (carbon, battery anodes; carbon nanotube with silicon nanoparticle films as anodes for secondary lithium batteries)				
IT Vapor deposition process (chemical, of silicon nanoparticles; carbon nanotube with silicon nanoparticle films as anodes for secondary lithium batteries)				
IT Battery electrolytes (nonaq.; carbon nanotube with silicon nanoparticle films as anodes for secondary lithium batteries)				
IT Nanoparticles (silicon, battery anodes; carbon nanotube with silicon nanoparticle films as anodes for secondary lithium batteries)				
IT 19414-36-9, Iron lithium manganese phosphate ((Fe,Mn)Li(PO4)) 942630-37-7				
RL: TEM (Technical or engineered material use); USES (Uses) (battery cathodes; carbon nanotube with silicon nanoparticle films as anodes for secondary lithium batteries)				
IT 7803-62-5, Silane, reactions RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent) (decomposition of, for deposition of silicon nanoparticles; carbon nanotube with silicon nanoparticle films as anodes for secondary lithium batteries)				
IT 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-48-4, Cobalt, uses				

RL: CAT (Catalyst use); USES (Uses)  
     (growth catalysts, for carbon nanotubes; carbon nanotube with silicon  
     nanoparticle films as anodes for secondary lithium batteries)  
 IT 7440-21-3, Silicon, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (nanoparticles, battery anodes; carbon nanotube with silicon  
     nanoparticle films as anodes for secondary lithium batteries)  
 IT 7440-44-0, Carbon, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (nanotubes, battery anodes; carbon nanotube with silicon  
     nanoparticle films as anodes for secondary lithium batteries)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,  
     Propylene carbonate 463-79-6D, Carbonic acid, esters 616-38-6,  
     Dimethyl carbonate 2550-62-1 7791-03-9, Lithium perchlorate  
     14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium  
     hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 90076-65-6  
     132843-44-8  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (nonaq. battery electrolytes containing; carbon nanotube with  
     silicon nanoparticle films as anodes for secondary lithium  
     batteries)

**AB** Anodes for secondary lithium batteries are fabricated by deposition of carbon nanotubes on an elec. conducting substrate, followed by chemical vapor deposition of a thin film (thickness 1-50 nm) of silicon nanoparticles. The carbon nanotubes are typically grown so that they are parallel to each other, using decomposition of hydrocarbon gases in the presence of a growth catalyst (e.g., Ni, Co, or Fe). Silicon nanoparticles are grown by CVD of SiH4. Suitable battery cathodes include Li<sub>x</sub>Mn<sub>1-x</sub>Po<sub>4</sub> (x = 0-1) and Li<sub>x</sub>(Co,Ni,Mn,Al)O<sub>2</sub>. The electrodes are used in conjunction with a nonaq. electrolyte composed of a polar aprotic solvent with lithium salts.

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 10 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 20071675612 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 147:98643  
 TITLE: Electrodes comprising mixed active particles  
 INVENTOR(S): Barker, Jeremy  
 PATENT ASSIGNEE(S): UK  
 SOURCE: U.S. Pat. Appl. Publ., 37pp., Cont.-in-part of U.S.  
         Ser. No. 381,602.  
         CODEN: USXKCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070141468	A1	20070621	US 2007-676707	20070220
US 20040197654	A1	20041007	US 2003-406890	20030403
US 7041239	B2	20060509		
US 20060194112	A1	20060831	US 2006-381602	20060504
PRIORITY APPLN. INFO.:			US 2003-406890	A1 20030403
			US 2006-381602	A2 20060504

TI Electrodes comprising mixed active particles  
 IT Battery electrodes  
     (electrodes comprising mixed active particles)  
 IT 12162-92-4P, Lithium vanadium oxide (LiV<sub>2</sub>O<sub>5</sub>) 12190-79-3P, Cobalt lithium  
     oxide (CoLiO<sub>2</sub>) 12527-46-7P, Copper lithium oxide (CuLi<sub>2</sub>O<sub>2</sub>)

84159-18-2P, Lithium vanadium phosphate Li<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub> 143623-49-8P, Cobalt lithium nickel oxide (Co<sub>0.25</sub>LiNiO<sub>1.75</sub>O<sub>2</sub>) 179802-96-1P, Cobalt lithium manganese nickel oxide (Co<sub>0.2</sub>LiMnO<sub>0.1</sub>NiO<sub>0.7</sub>O<sub>2</sub>) 610321-60-3P  
632286-77-2P, Iron lithium magnesium phosphate Fe<sub>0.9</sub>LiMg<sub>0.1</sub>PO<sub>4</sub>  
643752-34-5P, Iron lithium magnesium phosphate (Fe<sub>0.95</sub>LiMg<sub>0.05</sub>(PO<sub>4</sub>))  
942263-50-5P 942263-51-6P  
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(electrodes comprising mixed active particles)

AB Disclosed is a battery containing a first electrode and a second electrode, and an electrolyte for transferring ionic charge-carriers there between, wherein the first electrode contains a first electrode active material represented by the formula A<sub>2</sub>M<sub>4</sub>K<sub>5</sub>M<sub>6</sub>nM<sup>7</sup>O<sub>6</sub>, and at least one second electrode active material selected from the group consisting of active materials represented by the formula Al<sub>a</sub>M<sub>b</sub>(XY<sub>4</sub>)<sub>c</sub>Z<sub>d</sub>, active materials represented by the formula A<sub>3</sub>hMn<sub>i</sub>O<sub>4</sub>, and mixts. thereof.

L3 ANSWER 11 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:646047 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 147:75878  
TITLE: Flat type nonaqueous electrolyte secondary battery  
INVENTOR(S): Fukunaga, Hiroshi; Yagi, Youshin; Wada, Shuichi; Hara, Konji; Kohno, Kazushige; Haruna, Hiroshi  
PATENT ASSIGNEE(S): Japan  
SOURCE: U.S. Pat. Appl. Publ., 15pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070134558	A1	20070614	US 2006-637695	20061213
JP 2007165111	A	20070628	JP 2005-359729	20051214
PRIORITY APPLN. INFO.:			JP 2005-359729	A 20051214
TI	Flat type nonaqueous electrolyte secondary battery			
IT	Battery electrolytes			
	Control apparatus			
	Secondary batteries			
	(flat type nonaq. electrolyte secondary battery)			
IT	827-52-1, Cyclohexyl benzene 872-36-6, Vinylene carbonate 16734-12-6D, Disulfide, derivative 190075-56-0 409071-16-5 941671-93-8			
RL: MOA (Modifier or additive use); USES (Uses)	(flat type nonaq. electrolyte secondary battery)			
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 39457-42-6, Lithium manganese oxide 90076-65-6 941668-54-8, Aluminum lithium manganese oxide (Al <sub>0.02</sub> Li <sub>1.02</sub> Mn <sub>1.98</sub> O <sub>4</sub> ) 941668-55-9, Aluminum lithium manganese oxide (Al <sub>0.1</sub> Li <sub>1.04</sub> Mn <sub>1.9</sub> O <sub>4</sub> ) 941668-56-0 941668-57-1, Cobalt lithium manganese nickel oxide (Co <sub>0.3</sub> Li <sub>1.02</sub> Mn <sub>0.4</sub> Ni <sub>10</sub> .302) 941668-58-2, Cobalt lithium manganese nickel oxide (Co <sub>0.4</sub> Li <sub>1.02</sub> Mn <sub>0.2</sub> Ni <sub>0.402</sub> )			
RL: TEM (Technical or engineered material use); USES (Uses)	(flat type nonaq. electrolyte secondary battery)			
AB	Using a pos. electrode active material including spinel type manganese			

oxide as the main constituent, a novel low cost and high output power flat type nonaq. secondary cell for HEVs that has increased safety at overcharge, and superior storage properties and cycle life is provided. A flat type nonaq. secondary cell that has increased safety and is superior in storage and cycle properties even though the cell is a laminate type cell which does not have a blocking mechanism can be obtained by blending the spinel type lithium manganese oxide of the pos. electrode and 5 wt% to 40 wt% of layered type lithium manganese oxide, to suppress storage deterioration at a high temperature and to simultaneously achieve safety when overcharged, and further, by adding a Li compound, to suppress deterioration of a mixed pos. electrode active material during a high temperature cycle.

L3 ANSWER 12 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007534283 CAPLUS <<LOGINID::20080630>>

DOCUMENT NUMBER: 146:504138

TITLE: Lithium-transition metal mixed oxide, its manufacture, and secondary lithium batteries using it as cathode active mass

INVENTOR(S): Moriyama, Nariaki; Matsubara, Takuya

PATENT ASSIGNEE(S): Ishihara Sangyo Kaisha, Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 15pp.

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007123255	A	20070517	JP 2006-260105	20060926
PRIORITY APPLN. INFO.:			JP 2005-279126	A 20050927
TI	Lithium-transition metal mixed oxide, its manufacture, and secondary lithium batteries using it as cathode active mass			
IT	Battery cathodes (manufacture of Li-transition metal mixed oxide with high discharge capacity and charge/discharge efficiency for Li battery cathode)			
IT	847986-31-6P, Cobalt manganese nickel carbonate 936246-07-0P			
RL:	IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent) (manufacture of Li-transition metal mixed oxide with high discharge capacity and charge/discharge efficiency for Li battery cathode)			
IT	862366-00-5P, Cobalt lithium manganese nickel oxide (Co0.15Li1.05Mn0.4Ni0.402) 916896-29-2P, Cobalt lithium manganese nickel oxide (Co0.32Li1.04Mn0.32Ni0.3202) 936245-95-3P, Cobalt lithium manganese nickel oxide (Co0.31Li1.06Mn0.32Ni0.3202) 936245-97-5P, Cobalt lithium manganese nickel oxide (Co0.31Li1.06Mn0.31Ni0.3102) 936246-00-3P, Cobalt lithium manganese nickel oxide (Co0.04Li1.06Mn0.46Ni0.46O2) 936246-04-7P			
RL:	IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (manufacture of Li-transition metal mixed oxide with high discharge capacity and charge/discharge efficiency for Li battery cathode)			
IT	1310-65-2, Lithium hydroxide			
RL:	RCT (Reactant); RACT (Reactant or reagent) (manufacture of Li-transition metal mixed oxide with high discharge capacity and charge/discharge efficiency for Li battery cathode)			
IT	936246-11-6, Cobalt lithium manganese nickel oxide (Co0-0.35Li1-1.15Mn0.28-0.47Ni0.23-0.53O2) 936246-13-8			
RL:	TEM (Technical or engineered material use); USES (Uses) (manufacture of Li-transition metal mixed oxide with high discharge capacity and charge/discharge efficiency for Li battery cathode)			

AB The title mixed oxide is layered rock salt-type oxide represented by  $\text{Li}_{1+x}\text{M}_1\text{-xO}_2$  ( $\text{M} = \text{Ni, Mn, Co, Fe, Cu, Zn, Cr, Ti, Zr}; x = 0-0.15$ ) with total anion content  $\leq 1500$  ppm, total alkali metal content  $\leq 2000$  ppm, and X-ray diffraction peak intensity ratio  $[\text{I}(003)/\text{I}(104)] \geq 1.4$ . The mixed oxide is manufactured by (1) leaching a transition metal carbonate in basic aqueous solution, filtering, and washing with pure water, (2) reacting the treated carbonate with a water-soluble Li compound in an aqueous solvent and collecting the resulting mixed oxide precursor by solid-liquid separation, and (3) firing the precursor. The mixed oxide has high crystallinity, discharge capacity, and charge-discharge rate characteristics. The batteries using the mixed oxide show high output.

L3 ANSWER 13 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:519666 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 148:520534  
TITLE: Structural and electrochemical properties of  $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ - $\text{LiMg}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$  solid solutions  
AUTHOR(S): Fujii, Yasuhiro; Miura, Hiroshi; Suzuki, Naoto; Shoji, Takayuki; Nakayama, Noriaki  
CORPORATE SOURCE: Tosoh Co., Ltd, Syunan, Yamaguchi, 746-8501, Japan  
SOURCE: Solid State Ionics (2007), 178(11-12), 849-857  
CODEN: SSIOD3; ISSN: 0167-2738  
PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
TI Structural and electrochemical properties of  $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ - $\text{LiMg}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$  solid solutions  
IT Secondary batteries  
(lithium; structural and electrochem. properties of metal oxide solid solns.)  
IT Open circuit potential  
Redox potential  
Solid solutions  
Stoichiometry  
(structural and electrochem. properties of metal oxide solid solns.)  
IT 346417-97-8, Cobalt lithium manganese nickel oxide  
( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$ ) 493326-93-5, Cobalt lithium manganese nickel oxide  
( $\text{Co}_{0.33}\text{LiMn}_{0.34}\text{Ni}_{0.33}\text{O}_2$ ) 856700-33-9, Cobalt lithium manganese nickel oxide  
( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.34}\text{O}_2$ ) 932745-06-7, Cobalt lithium magnesium manganese oxide  
( $\text{Co}_{0.33}\text{LiMg}_{0.33}\text{Mn}_{0.33}\text{O}_2$ ) 1022913-74-1  
1022913-75-2 1022913-76-3 1022913-77-4, Cobalt lithium magnesium manganese oxide  
( $\text{Co}_{0.33}\text{LiMg}_{0.34}\text{Mn}_{0.33}\text{O}_2$ ) 1022913-78-5  
1022913-79-6, Cobalt lithium magnesium manganese oxide  
( $\text{Co}_{0.33}\text{LiL}_{0.01}\text{Mg}_{0.33}\text{Mn}_{0.34}\text{O}_2$ )  
RL: TEM (Technical or engineered material use); USES (Uses)  
(structural and electrochem. properties of metal oxide solid solns.)  
AB The complete solid solns. in the pseudo-binary  $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ - $\text{LiMg}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$  system with  $\alpha\text{-NaFeO}_2$  type layered rock-salt structure were synthesized. The replacement of Ni with Mg atoms has enhanced the diffraction intensity due to cation ordering in  $\alpha\text{-NaFeO}_2$  type structure. Powder x-ray diffraction (XRD) patterns of  $\text{LiMg}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$  show a broad and diffuse peak with an intensity maximum at around  $d = 4.2$  Å indicating an in-plane  $[\sqrt{3} + \sqrt{3}]$   $30^\circ$  type ordering. Electron diffraction (ED) patterns also show clear and intense superlattice spots due to the in-plane  $[\sqrt{3} + \sqrt{3}]$   $30^\circ$  type ordered layers. However, the  $[\sqrt{3} + \sqrt{3}]$   $30^\circ$  type ordered layers are

almost randomly stacked as evidenced by diffuse scattering in the powder XRD and ED patterns. The TEM lattice image clearly reveals the random stacking. XRD and ED patterns agree with the simulated ones using the DIFFaX program based on the above structural model. Solid solution  $\text{LiNi}_{1/3-x}\text{Mg}_x\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$  ( $0.0 \leq x \leq 0.33$ ) also show a similar 2 dimensional cation ordering. Electrochem. measurements of  $\text{LiNi}_{1/3-x}\text{Mg}_x\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$  indicate that not only Ni but also Co can be active as redox species in this solution system. The redox potential of Co in  $\text{LiMg}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$  is .apprx.4.1 V.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 14 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:1441018 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 148:265846  
TITLE: Electrochemical properties of Al doped  
 $\text{Li}(\text{Ni}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3})\text{O}_2$   
AUTHOR(S): Kim, Seon Hye; Shim, Kwang Bo; Han, Kyoung Ran; Kim, Chang-Sam  
CORPORATE SOURCE: Department of Ceramic Engineering, Hanyang University, Seoul, 133-791, S. Korea  
SOURCE: Diffusion and Defect Data--Solid State Data, Pt. B: Solid State Phenomena (2007), 124-126(Pt. 2, Advances in Nanomaterials and Processing, Part 2), 1023-1026  
CODEN: DDBPE8; ISSN: 1012-0394  
PUBLISHER: Trans Tech Publications Ltd.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
TI Electrochemical properties of Al doped  $\text{Li}(\text{Ni}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3})\text{O}_2$   
IT Battery cathodes  
(electrochem. properties of Al-doped  $\text{Li}(\text{Ni}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3})\text{O}_2$  cathode material for lithium batteries)  
IT Secondary batteries  
(lithium; electrochem. properties of Al-doped  $\text{Li}(\text{Ni}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3})\text{O}_2$  cathode material for lithium batteries)  
IT 346417-97-8, Cobalt lithium manganese nickel oxide  
( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$ ) 846020-48-2 1006654-52-9  
1006654-53-0 1006654-54-1  
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(electrochem. properties of Al-doped  $\text{Li}(\text{Ni}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3})\text{O}_2$  cathode material for lithium batteries)  
AB Al-doped  $\text{Li}(\text{Ni}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3-x}\text{Al}_x)\text{O}_2$  ( $x = 0.005, 0.01, 0.05$ ) and  $\text{Li}(\text{Ni}_{1/3-x}\text{Co}_{1/3}\text{Mn}_{1/3-x}\text{Al}_x)\text{O}_2$  ( $x = 0.01, 0.05$ ) cathode materials for Li ion batteries were prepared by ultrasonic spray pyrolysis and heat treatment. Substitution with Al decreased the Mn<sup>3+</sup> content, promoted grain growth and broadened the particle size distribution of the powders. The initial discharge capacity of cells made with  $\text{Li}(\text{Ni}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3-0.005}\text{Al}_{0.005})\text{O}_2$  powder was as high as that of the undoped (.apprx.180 mA·h/g, 3.0-4.5 V) and showed an excellent cycle stability. The improvement of the cycle stability is due to the decrease of Mn<sup>3+</sup> in  $\text{Li}(\text{Co}_{1/3}\text{Ni}_{1/3}\text{Mn}_{1/3-x}\text{Al}_x)\text{O}_2$  by Al doping.  
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 15 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:435082 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 146:405265  
TITLE: Lithium secondary batteries showing high capacitance and good performance under heavy load  
INVENTOR(S): Fujie, Yusuke; Sato, Takashi

PATENT ASSIGNEE(S): Sony Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 14pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007103245	A	20070419	JP 2005-293904	20051006
PRIORITY APPLN. INFO.:			JP 2005-293904	20051006
TI Lithium secondary batteries showing high capacitance and good performance under heavy load				
IT Secondary batteries (lithium; secondary batteries containing two kinds of lithium-containing double oxides in cathodes and showing good heavy-load operation)				
IT 12190-79-3P, Lithium cobaltate (LiCoO <sub>2</sub> ) 933762-02-8DP, Cobalt lithium manganese nickel oxide (Co <sub>0.25</sub> Li <sub>0.05</sub> -1.15Mn <sub>0.05</sub> Ni <sub>0.702</sub> ), oxygen-deficient 933762-03-9DP, Cobalt lithium manganese nickel oxide (Co <sub>0.65</sub> Li <sub>0.05</sub> -1.15Mn <sub>0.05</sub> Ni <sub>0.302</sub> ), oxygen-deficient 933762-04-0DP, Lithium manganese nickel oxide (Li <sub>0.05</sub> -1.15Mn <sub>0.4Ni<sub>0.602</sub></sub> ), oxygen-deficient 933762-05-1DP, Cobalt lithium manganese nickel oxide (Co <sub>0.33</sub> Li <sub>0.05</sub> -1.15Mn <sub>0.33</sub> Ni <sub>0.3302</sub> ), oxygen-deficient 933762-07-3DP, oxygen-deficient RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (cathode active mass; secondary batteries containing two kinds of lithium-containing double oxides in cathodes and showing good heavy-load operation)				
AB The batteries have cathodes containing (A) Li <sub>1-t</sub> M <sub>1-s</sub> O <sub>2-e</sub> (M <sub>1</sub> = Mg, Al, B, Ti, V, Cr, Fe, Ca; 0.05 ≤ t ≤ 1.15; 0 ≤ s ≤ 0.03; -0.1 ≤ e ≤ 0.2) and (B) Li <sub>w</sub> Ni <sub>1-x-y-z</sub> CoxMnyMzO <sub>2-d</sub> (M <sub>2</sub> = Mg, Al, B, Ti, V, Cr, Fe, Ca; 0.05 ≤ w ≤ 1.15; 0.30 ≤ x + y + z ≤ 0.70; 0.05 ≤ y ≤ 0.40; 0 ≤ z < 0.1; -0.1 ≤ e ≤ 0.2) at A/B (15-85):(15-85) and anodes containing graphitized mesophase carbon microbeads. The batteries show large capacitance, long cycle life, and less rise in resistivity on high-power discharge.				
L3 ANSWER 16 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN ACCESSION NUMBER: 2007:389537 CAPLUS <<LOGINID::20080630>> DOCUMENT NUMBER: 148:148348 TITLE: Al, B, and F doped LiNi <sub>1/3</sub> Co <sub>1/3</sub> Mn <sub>1/3</sub> O <sub>2</sub> as cathode material of lithium-ion batteries AUTHOR(S): Ye, Shangyun; Xia, Yongyao; Zhang, Pingwei; Qiao, Zhiyu CORPORATE SOURCE: Department of Physical Chemistry, University of Science and Technology, Beijing, 100083, Peop. Rep. China SOURCE: Journal of Solid State Electrochemistry (2006), Volume Date 2007, 11(6), 805-810 PUBLISHER: Springer GmbH DOCUMENT TYPE: Journal LANGUAGE: English TI Al, B, and F doped LiNi <sub>1/3</sub> Co <sub>1/3</sub> Mn <sub>1/3</sub> O <sub>2</sub> as cathode material of lithium-ion batteries IT Battery cathodes (Al-, B-, and F-doped LiNi <sub>1/3</sub> Co <sub>1/3</sub> Mn <sub>1/3</sub> O <sub>2</sub> cathode materials for lithium-ion batteries)				

- IT Secondary batteries  
     (lithium; Al-, B-, and F-doped LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3O<sub>2</sub> cathode materials  
     for lithium-ion batteries)
- IT 346417-97-8, Cobalt lithium manganese nickel oxide  
     (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 1001606-46-7 1001606-52-5  
     RL: PRP (Properties); TEM (Technical or engineered material use); USES  
     (Uses)  
     (Al-, B-, and F-doped LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3O<sub>2</sub> cathode materials for  
     lithium-ion batteries)
- AB The mixed transition metal compds., Li[(Ni<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3)<sub>1-x-y</sub>Al<sub>x</sub>By]O<sub>2-z</sub>F<sub>z</sub>  
     (x = 0, 0.02, y = 0, 0.02, z = 0, 0.02), were synthesized via copptn.  
     followed by high-temperature heat-treatment. XRD revealed that this material  
     has a typical  $\alpha$ -NaFeO<sub>2</sub> type layered structure with R<sub>3</sub>-m space group.  
     Rietveld refinement showed that cation mixing in the Li(Ni<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3)O<sub>2</sub>  
     can be absolutely decreased by Al-doping. Al-, B- and F-doped compds.  
     showed both improved phys. and electrochem. properties, high tap d. and  
     they had a reversible capacity of 190 mA/g with excellent capacity  
     retention even when the electrodes were cycled between 3.0 and 4.7 V.
- REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS  
     RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 17 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
     ACCESSION NUMBER: 2007:197939 CAPLUS <<LOGINID::20080630>>  
     DOCUMENT NUMBER: 1461:277691  
     TITLE: Granular cathode active mass uniformly covered with  
     mixed oxide, its manufacture, and secondary  
     battery using it  
     INVENTOR(S): Soma, Masanori; Oyama, Ariyo; Watanabe, Haruo; Azuma,  
     Hideto  
     PATENT ASSIGNEE(S): Sony Corp., Japan  
     SOURCE: Jpn. Kokai Tokkyo Koho, 22pp.  
     CODEN: JKXXAF  
     DOCUMENT TYPE: Patent  
     LANGUAGE: Japanese  
     FAMILY ACC. NUM. COUNT: 1  
     PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007048711	A	20070222	JP 2005-234678	20050812
PRIORITY APPLN. INFO.:			JP 2005-234678	20050812
TI Granular cathode active mass uniformly covered with mixed oxide, its manufacture, and secondary battery using it				
IT Battery cathodes (active mass; manufacture of granular cathode active mass uniformly covered with mixed oxide for battery for high output and charge/discharge efficiency)				
IT 926921-16-6P, Cobalt lithium manganese nickel oxide (Co <sub>0.9</sub> Li <sub>1</sub> .05Mn <sub>0.05</sub> Ni <sub>0.05</sub> O <sub>2</sub> ) 926921-18-8P, Cobalt lithium manganese nickel oxide (Co <sub>0.95</sub> Li <sub>1</sub> .05Mn <sub>0.02</sub> Ni <sub>0.02</sub> O <sub>2</sub> ) 926921-20-2P, Cobalt lithium manganese nickel oxide (Co <sub>0.75</sub> Li <sub>1</sub> .05Mn <sub>0.12</sub> Ni <sub>0.12</sub> O <sub>2</sub> ) 926921-22-4P, Cobalt lithium manganese nickel oxide (Co <sub>0.9</sub> Li <sub>1</sub> .05Mn <sub>0.03</sub> Ni <sub>0.07</sub> O <sub>2</sub> ) 926921-23-5P, Cobalt lithium manganese nickel oxide (Co <sub>0.9</sub> Li <sub>1</sub> .05Mn <sub>0.06</sub> Ni <sub>0.04</sub> O <sub>2</sub> ) 926921-25-7P 926921-26-8P RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (active mass; manufacture of granular cathode active mass uniformly covered with mixed oxide for battery for high output and charge/discharge efficiency)				
IT 926921-27-9 926921-28-0 926921-29-1 926921-30-4 926921-31-5 926921-32-6 926921-33-7 926921-34-8 926921-35-9 926921-36-0				

926921-37-1 926921-38-2 926921-39-3 926921-40-6 926921-41-7

926921-42-8 926921-43-9

RL: TEM (Technical or engineered material use); USES (Uses)  
(active mass; manufacture of granular cathode active mass uniformly covered  
with mixed oxide for battery for high output and  
charge/discharge efficiency)

IT 1308-06-1, Cobalt oxide (Co3O4) 12314-24-8, Cobalt hydroxide (Co(OH)<sub>2</sub>)  
21041-93-0, Cobalt hydroxide (Co(OH)<sub>2</sub>) 926921-44-0, Cobalt magnesium  
hydroxide (Co<sub>0.99</sub>Mg<sub>0.01</sub>(OH)<sub>2</sub>) 926921-45-1, Aluminum cobalt hydroxide  
(Al<sub>0.01</sub>Co<sub>0.99</sub>(OH)<sub>2</sub>)

RL: RCT (Reactant); RACT (Reactant or reagent)  
(source base particles; manufacture of granular cathode active mass  
uniformly covered with mixed oxide for battery for high  
output and charge/discharge efficiency)

AB The title active mass is particles with average composition represented by  
 $Li(1+a)Co(1-x-y-z)Ni_xMnyMzO(2-b)Fc$  [M = Mg, Al, B, Ti, V, Cr, Fe, Cu, Zn,  
Mo, Sn, W, Zr, Y, Nb, Ca, Sr; x = 0-0.30; y = 0-0.30; z = 0-0.10; x and/or  
y is >0; a = -0.10-0.10; b = -0.10-0.20; c = 0-0.10], wherein Ni and/or Mn  
contents in the particle surface layer are higher than those in the  
inside. The active mass is manufactured by forming a Ni and/or Mn-containing  
coating layer on Li-free Co-containing compound particles, mixing with Li  
compound, and then heating. The active mass has high chemical stability and  
capacity. The battery using the active mass show high  
charge/discharge efficiency.

L3 ANSWER 18 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007118002 CAPLUS <<LOGINID::20080630>>

DOCUMENT NUMBER: 1461209/27

TITLE: Electrode for secondary lithium battery

INVENTOR(S): Nishino, Hajime; Tsutsumi, Shuji; Kasamatsu, Shinji;  
Takezawa, Hideharu; Shimada, Mikinari

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: PCT Int. Appl., 28pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007013375	A1	20070201	WO 2006-JP314503	20060721
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GB, GH, GM, HN, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2007059387	A	20070308	JP 2006-200521	20060724
KR 2008022139	A	20080310	KR 2007-730775	20071228
PRIORITY APPLN. INFO.:			JP 2005-219129	A 20050728
			WO 2006-JP314503	W 20060721

TI Electrode for secondary lithium battery

IT Battery cathodes

Battery electrodes

(structure of electrodes for secondary lithium batteries)  
IT 7429-90-5, Aluminum, uses 7782-42-5, Graphite, uses 12031-65-1,  
Lithium nickel oxide (LiNiO<sub>2</sub>) 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
113066-78-7, Cobalt lithium nickel oxide (Co<sub>0.4</sub>LiNi<sub>0.6</sub>O<sub>2</sub>) 126984-21-2,  
Cobalt lithium nickel oxide (Co<sub>0.95</sub>LiNi<sub>0.05</sub>O<sub>2</sub>) 404904-11-6, Cobalt  
lithium manganese nickel oxide (Co<sub>0.4</sub>LiMn<sub>0.3</sub>Ni<sub>0.3</sub>O<sub>2</sub>) 910562-07-1, Cobalt  
lithium manganese nickel oxide (Co<sub>0.35</sub>LiMn<sub>0.35</sub>Ni<sub>0.3</sub>O<sub>2</sub>) 922732-78-3,  
Cobalt lithium manganese nickel oxide (Co<sub>0.32</sub>LiMn<sub>0.38</sub>Ni<sub>0.3</sub>O<sub>2</sub>)  
922732-79-4 922732-80-7 922732-81-8 922732-82-9  
922732-83-0 922732-84-1 922732-85-2 922732-86-3  
922732-87-4 922732-88-5, Barium cobalt lithium nickel oxide  
(Ba<sub>0.35</sub>Co<sub>0.35</sub>LiNi<sub>0.3</sub>O<sub>2</sub>) 922732-89-6, Calcium cobalt lithium nickel oxide  
(Ca<sub>0.35</sub>Co<sub>0.35</sub>LiNi<sub>0.3</sub>O<sub>2</sub>) 922732-91-0, Aluminum cobalt lithium nickel  
oxide (Al<sub>0.35</sub>Co<sub>0.35</sub>LiNi<sub>0.3</sub>O<sub>2</sub>) 922732-93-2, Cobalt lithium nickel  
titanium oxide (Co<sub>0.35</sub>LiNi<sub>0.3</sub>Ti<sub>0.35</sub>O<sub>2</sub>) 922732-94-3, Cobalt lithium  
nickel yttrium oxide (Co<sub>0.35</sub>LiNi<sub>0.3</sub>Y<sub>0.35</sub>O<sub>2</sub>) 922732-95-4, Cobalt lithium  
nickel niobium oxide (Co<sub>0.35</sub>LiNi<sub>0.3</sub>Nb<sub>0.35</sub>O<sub>2</sub>) 922732-96-5, Cobalt lithium  
nickel tungsten oxide (Co<sub>0.35</sub>LiNi<sub>0.3</sub>W<sub>0.35</sub>O<sub>2</sub>) 922732-97-6, Cobalt lithium  
nickel strontium oxide (Co<sub>0.35</sub>LiNi<sub>0.3</sub>Sr<sub>0.35</sub>O<sub>2</sub>) 922732-98-7, Cobalt  
lithium molybdenum nickel oxide (Co<sub>0.35</sub>LiMo<sub>0.35</sub>Ni<sub>0.3</sub>O<sub>2</sub>) 922732-99-8,  
Cobalt lithium magnesium nickel oxide (Co<sub>0.35</sub>LiMg<sub>0.35</sub>Ni<sub>0.3</sub>O<sub>2</sub>)  
922733-00-4, Barium cobalt lithium nickel oxide (Ba<sub>0.36</sub>Co<sub>0.34</sub>LiNi<sub>0.3</sub>O<sub>2</sub>)  
922733-01-5, Calcium cobalt lithium nickel oxide (Ca<sub>0.35</sub>Co<sub>0.34</sub>LiNi<sub>0.3</sub>O<sub>2</sub>)  
922733-02-6, Cobalt lithium nickel titanium oxide (Co<sub>0.34</sub>LiNi<sub>0.3</sub>Ti<sub>0.36</sub>O<sub>2</sub>)  
922733-03-7, Cobalt lithium nickel yttrium oxide (Co<sub>0.34</sub>LiNi<sub>0.3</sub>Y<sub>0.36</sub>O<sub>2</sub>)  
922733-04-8, Cobalt lithium nickel niobium oxide (Co<sub>0.34</sub>LiNi<sub>0.3</sub>Nb<sub>0.36</sub>O<sub>2</sub>)  
922733-05-9, Cobalt lithium nickel tungsten oxide (Co<sub>0.34</sub>LiNi<sub>0.3</sub>W<sub>0.36</sub>O<sub>2</sub>)  
922733-06-0, Cobalt lithium nickel strontium oxide (Co<sub>0.34</sub>LiNi<sub>0.3</sub>Sr<sub>0.36</sub>O<sub>2</sub>)  
922733-07-1, Cobalt lithium molybdenum nickel oxide  
(Co<sub>0.34</sub>LiMo<sub>0.36</sub>Ni<sub>0.3</sub>O<sub>2</sub>) 922733-08-2, Cobalt lithium magnesium nickel  
oxide (Co<sub>0.34</sub>LiMg<sub>0.36</sub>Ni<sub>0.3</sub>O<sub>2</sub>) 922733-09-3 922733-10-6 922733-11-7  
922733-12-8 922733-13-9 922733-14-0 922733-15-1  
922733-16-2 922733-17-3 922733-18-4 922733-19-5 922733-20-8  
922733-21-9 922733-22-0 922733-24-2 922733-25-3  
922733-26-4 922733-27-5 922733-28-6 922733-29-7 923018-03-5,  
Aluminum cobalt lithium nickel oxide (Al<sub>0.36</sub>Co<sub>0.34</sub>LiNi<sub>0.3</sub>O<sub>2</sub>)  
RL: TEM (Technical or engineered material use); USES (Uses)  
(structure of electrodes for secondary lithium batteries)  
AB This invention provides an electrode for a secondary lithium  
battery that, even when exposed to severe conditions, for example,  
in a nail piercing test or collapse test, can ensure a high level of  
safety and also has excellent output characteristics. Specifically, there  
is provided an electrode for a secondary lithium battery,  
comprising a mixture containing Li-intercalating active mass particles and  
loaded on a collector; wherein the surface of the collector has a concave  
part, and  $\geq 30\%$  of the mixture loaded area of the collector is  
accounted for by the concave part. There is also provided an electrode  
for a secondary lithium battery in which, in a cross section  
formed by simultaneously cutting a mixture and a collector perpendicularly  
to the electrode face, the maximum depth of the concave part is  $\geq 1$   
 $\mu\text{m}$ , or the difference between the average thickness of the current  
collector and the maximum thickness of the collector is  $\geq 0.35 \mu\text{m}$ .  
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 19 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:87334 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 146:187484  
TITLE: Secondary nonaqueous electrolyte battery and  
its manufacture  
INVENTOR(S): Takeuchi, Takashi; Saito, Takaya; Shirane, Takayuki;

Ueda, Atsushi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 53pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007010915	A1	20070125	WO 2006-JP314224	20060719
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2007053083	A	20070301	JP 2006-196526	20060719
KR 2008031151	A	20080408	KR 2007-718421	20070810
CN 101138125	A	20080305	CN 2006-80007202	20070905

PRIORITY APPLN. INFO.:

TI Secondary nonaqueous electrolyte battery and its manufacture  
 IT Secondary batteries  
     (lithium; structure and manufacture of secondary lithium batteries  
     containing additive modified electrolyte solns.)  
 IT Battery electrolytes  
     (structure and manufacture of secondary lithium batteries containing  
     additive modified electrolyte solns.)  
 IT 108-31-6, Maleic anhydride, uses 872-36-6, Vinylene carbonate  
 1120-71-4, Propane sulfone 1469-73-4, Propylene sulfite 3741-38-6,  
 Ethylene sulfite 4427-96-7, Vinyl ethylene carbonate 14283-07-9,  
 Lithium tetrafluoroborate  
 RL: MOA (Modifier or additive use); USES (Uses)  
     (structure and manufacture of secondary lithium batteries containing  
     additive modified electrolyte solns.)  
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 623-53-0,  
 Ethyl methyl carbonate 7440-21-3, Silicon, uses 7631-86-9, Silicon  
 oxide, uses 7782-42-5, Graphite, uses 9002-88-4, Polyethylene  
 9003-07-0, Polypropylene 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 21324-40-3, Lithium hexafluorophosphate 500912-67-4, Cobalt lithium  
 manganese nickel oxide (Co<sub>0.33</sub>Li<sub>1.05</sub>Mn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 906548-33-2, Cobalt  
 lithium manganese nickel oxide (Co<sub>0.33</sub>Li<sub>1.05</sub>Mn<sub>0.01</sub>Ni<sub>0.66</sub>O<sub>2</sub>) 906548-34-3,  
 Aluminum cobalt lithium nickel oxide (Al<sub>0.03</sub>Co<sub>0.15</sub>Li<sub>1.01</sub>Ni<sub>0.82</sub>O<sub>2</sub>)  
 921436-58-0, Lithium manganese nickel oxide (Li<sub>1.05</sub>Mn<sub>0.33</sub>Ni<sub>0.67</sub>O<sub>2</sub>)  
 921436-59-1, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.01</sub>Li<sub>1</sub>Mn<sub>0.33</sub>Ni<sub>0.66</sub>O<sub>2</sub>) 921436-60-4, Cobalt lithium manganese nickel  
 oxide (Co<sub>0.35</sub>Li<sub>1</sub>Mn<sub>0.33</sub>Ni<sub>0.32</sub>O<sub>2</sub>) 921436-61-5, Cobalt lithium manganese  
 nickel oxide (Co<sub>0.41</sub>Li<sub>1</sub>Mn<sub>0.33</sub>Ni<sub>0.27</sub>O<sub>2</sub>) 921436-62-6, Cobalt lithium nickel  
 oxide (Co<sub>0.33</sub>Li<sub>1</sub>Ni<sub>0.5</sub>O<sub>2</sub>) 921436-65-9, Cobalt lithium manganese  
 nickel oxide (Co<sub>0.33</sub>Li<sub>1</sub>0.5Mn<sub>0.17</sub>O<sub>2</sub>) 921436-66-0, Cobalt lithium  
 manganese nickel oxide (Co<sub>0.33</sub>Li<sub>1</sub>0.5Mn<sub>0.55</sub>Ni<sub>0.12</sub>O<sub>2</sub>) 921436-68-2  
 921436-69-3 921436-70-6 921436-71-7 921436-72-8  
 RL: TEM (Technical or engineered material use); USES (Uses)

(structure and manufacture of secondary lithium batteries containing additive modified electrolyte soins.)

AB The battery has a cathode comprising a transition metal-containing composite oxide as a cathode active mass, an anode containing a Li-intercalating anode active mass, a separator, and an nonaq. electrolyte solution; where the nonaq. electrolyte solution contains  $\geq 1$  1st additive selected from ethylene sulfite, propylene sulfite and propane sulfone, and  $\geq 1$  2nd additive selected from maleic anhydride, vinylene carbonate, vinyl ethylene carbonate and LiBF<sub>4</sub>, and the charging final voltage is set at 4.3-4.5V. The battery is manufactured by assembling an electrode group containing the cathode, the anode, and the separator, and the required electrolyte solution, into a battery case, and charging the battery at a high voltage  $\geq 1$  time.

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 20 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 200744942 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 146:209671  
TITLE: Method for preparing composite metal oxide containing lithium  
INVENTOR(S): Fang, Songsheng  
PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China  
SOURCE: Faming Zuanli Shenqing Gongkai Shuomingshu, 23pp.  
CODEN: CNXXEV  
DOCUMENT TYPE: Patent  
LANGUAGE: Chinese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1893151	A	20070110	CN 2005-10035739	20050701
PRIORITY APPLN. INFO.:			CN 2005-10035739	20050701
TI	Method for preparing composite metal oxide containing lithium			
IT	Secondary batteries (lithium, lithium ion; method for preparing composite metal oxide containing lithium)			
IT	Coprecipitation (method for preparing composite metal oxide containing lithium)			
IT	144-62-7, Oxalic acid, uses 554-13-2, Lithium carbonate 1305-78-8, Calcium oxide, uses 1310-58-3, Potassium hydroxide, uses 1310-65-2, Lithium hydroxide 1310-73-2, Sodium hydroxide, uses 1314-13-2, Zinc oxide, uses 3251-23-8 6484-52-2, Ammonium nitrate, uses 7664-41-7, Ammonia, uses 7783-20-2, Ammonium sulfate, uses 7783-28-0, Diammonium hydrogen phosphate 7786-81-4, Nickel sulfate 7790-69-4, Lithium nitrate 10043-01-3, Aluminum sulfate 10043-35-3, Boric acid (H3BO3), uses 10124-43-3, Cobalt sulfate 10141-05-6, Cobalt nitrate 10377-66-9, Manganese nitrate 12018-00-7, Chromous oxide 12054-48-7, Nickel hydroxide 12672-51-4, Cobalt hydroxide 13138-45-9, Nickel nitrate 13463-67-7, Titanium dioxide, uses 13473-90-0, Aluminum nitrate 14013-86-6, Ferrous nitrate 17375-37-0, Manganese carbonate 21645-51-2, Aluminum hydroxide, uses			
RL	NUU (Other use, unclassified); USES (Uses) (method for preparing composite metal oxide containing lithium)			
IT	7439-93-2, Lithium, uses 12031-65-1D, Lithium nickel oxide (LiNiO <sub>2</sub> ), metal-doped 12190-79-3D, Lithium cobalt oxide (LiCoO <sub>2</sub> ), metal-doped 101920-93-8D, Cobalt lithium nickel oxide (Co0.5LiNi0.5O <sub>2</sub> ), metal-doped 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O <sub>2</sub> ) 891484-55-2 923023-46-5 923023-48-7 923023-49-8 923023-50-1			

RL: TEM (Technical or engineered material use); USES (Uses)  
(method for preparing composite metal oxide containing lithium)  
AB The title composite metal oxide is shown in formula I ( $\text{Li}_{\alpha}\text{Ni}_{\beta}\text{Co}_{\gamma}\text{M}_1-\text{b}-\text{cO}_2$ ;  
 $\alpha = 0.97-1.07$ ;  $0 \leq \text{b} \leq 1$ ;  $0 \leq \text{c} \leq 1$ ;  $0.5 \leq (\text{b}+\text{c}) \leq 1$ ). The title method comprises the steps of: (1) preparing mixed complex solution containing ammonia, Ni and/or Co, (2) simultaneously adding the complex solution and alkaline solution to an reaction vessel slowly, co-precipitating to obtain Ni and/or Co composite hydroxide, aging,

separating, washing, and drying to obtain the precursor, (3) mixing the precursor with LiOH or Li salts, and metal M salts or oxides, and grinding, (4) heat treating the mixture at  $150-550^{\circ}\text{C}$ , and (5) heat treating at  $650-850^{\circ}\text{C}$  to obtain the final product. The composite metal oxide granules are ellipsoidal. The composite metal oxide has the advantages of uniform granularity, high d., good structure stability, good processability, and good electrochem. charge discharge and cycle performances.

L3 ANSWER 21 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:1339339 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 146:84663  
TITLE: Nonaqueous electrolyte secondary battery  
INVENTOR(S): Nishino, Hajime; Kasamatsu, Shinji; Takezawa, Hideharu; Okamura, Kazuhiro; Shimada, Mikinari  
PATENT ASSIGNEE(S): Japan  
SOURCE: U.S. Pat. Appl. Publ., 20pp., Cont.-in-part of U.S.  
Ser. No. 315,189.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 3  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060286445	A1	20061221	US 2006-473334	20060623
US 20060141341	A1	20060629	US 2005-315189	20051223

PRIORITY APPLN. INFO.: JP 2004-374200 A 20041224  
US 2005-315189 A2 20051223

TI Nonaqueous electrolyte secondary battery  
IT Polyanide fibers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(aramid; nonaq. electrolyte secondary battery)  
IT Nitrile rubber, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(hydrogenated; nonaq. electrolyte secondary battery)  
IT Battery electrolytes  
Safety  
Secondary batteries  
Thermal insulators  
(nonaq. electrolyte secondary battery)  
IT Oxides (inorganic), uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(nonaq. electrolyte secondary battery)  
IT Polyamides, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(nonaq. electrolyte secondary battery)  
IT Polyimides, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polyamide-; nonaq. electrolyte secondary battery)  
IT Polyamides, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
     (polyimide; nonaq. electrolyte secondary battery)  
 IT 9003-18-3D, hydrogenated  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (nitrile rubber; nonaq. electrolyte secondary battery)  
 IT 1344-28-1, Alumina, uses 2768-02-7, Vinyl trimethoxysilane  
     815594-01-5, BM 400B  
 RL: MOA (Modifier or additive use); USES (Uses)  
     (nonaq. electrolyte secondary battery)  
 IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate  
     1309-37-1, Iron oxide (Fe2O3), uses 1309-48-4, Magnesium oxide (MgO),  
     uses 1312-43-2, Indium oxide (In2O3) 1314-13-2, Zinc oxide (ZnO), uses  
     1317-38-0, Copper oxide (CuO), uses 7782-42-5, Graphite, uses  
     12036-01-0, Zirconium oxide (ZrO) 12137-20-1, Titanium oxide (TiO)  
     12190-79-3, Cobalt lithium oxide (CoLiO2) 12502-70-4, Manganese oxide  
     mno4 18868-43-4, Molybdenum oxide (MoO2) 21324-40-3, Lithium  
     hexafluorophosphate 21651-19-4, Tin oxide (SnO) 142447-14-1, Cobalt  
     lithium manganese oxide (Co0.98LiMn0.02O2) 157616-77-8, Cobalt lithium  
     tin oxide (Co0.98LiSn0.02O2) 162023-33-8, Cobalt iron lithium oxide  
     (Co0.98Fe0.02LiO2) 193214-24-3, Aluminum cobalt lithium nickel oxide  
     (A10.05Co0.15LiNi0.802) 193215-53-1, Cobalt lithium manganese nickel  
     oxide (Co0.2LiMn0.3Ni0.502) 198213-70-6, Cobalt lithium magnesium oxide  
     (Co0.98LiMg0.02O2) 253875-50-2, Cobalt lithium titanium oxide  
     (Co0.98LiTi0.02O2) 346417-97-8, Cobalt lithium manganese nickel oxide  
     (Co0.33LiMn0.33Ni0.33O2) 459409-01-9, Aluminum cobalt lithium oxide  
     (A10.02Co0.98LiO2) 867249-10-3, Cobalt lithium zinc oxide  
     (Co0.98LiZn0.02O2) 867249-16-9, Cobalt lithium molybdenum oxide  
     (Co0.98LiMo0.02O2) 867249-18-1, Cobalt lithium zirconium oxide  
     (Co0.98LiZr0.02O2) 896115-07-4 896115-08-5  
     896115-09-6 896115-10-9 896115-12-1 896115-13-2  
     896115-15-4 896115-16-5, Cobalt copper lithium oxide (Co0.98Cu0.02LiO2)  
     896115-17-6, Cobalt indium lithium oxide (Co0.98In0.02LiO2)  
     917108-92-0 917108-94-2  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (nonaq. electrolyte secondary battery)  
 AB Disclosed is a non-aqueous electrolyte secondary battery including:  
     a pos. electrode having a pos. electrode material mixture containing a  
     composite  
         lithium oxide; a neg. electrode; a polyolefin separator; a non-aqueous  
         electrolyte; and a heat-resistant insulating layer interposed between the  
         pos. and neg. electrodes. The pos. electrode material mixture has an estimated  
         heat generation rate at 200° of not greater than 50 W/kg. The pos.  
         electrode and the neg. electrode are wound together with the separator and  
         the heat-resistant insulating layer interposed there between.

L3 ANSWER 22 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:1339314 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 146:84662  
 TITLE: Nonaqueous electrolyte secondary battery  
 INVENTOR(S): Nishino, Hajime; Kasamatsu, Shinji; Takezawa,  
     Hideharu; Okamura, Kazuhiro; Shimada, Mikinari  
 PATENT ASSIGNEE(S): Japan  
 SOURCE: U.S. Pat. Appl. Publ., 22pp., Cont.-in-part of U.S.  
     Ser. No. 315,189.  
     CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 3  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20060286444	A1	20061221	US 2006-473327	20060623
US 20060141341	A1	20060629	US 2005-315189	20051223
PRIORITY APPLN. INFO.:			JP 2004-374200	A 20041224
			US 2005-315189	A2 20051223
TI Nonaqueous electrolyte secondary battery				
IT Polyamide fibers, uses				
RL: TEM (Technical or engineered material use); USES (Uses) (aramid; nonaq. electrolyte secondary battery with improved safety)				
IT Thermal insulators				
(heat-resistant; nonaq. electrolyte secondary battery with improved safety)				
IT Nitrile rubber, uses				
RL: MOA (Modifier or additive use); USES (Uses) (hydrogenated; nonaq. electrolyte secondary battery with improved safety)				
IT Battery cathodes				
Safety				
Secondary batteries				
(nonaq. electrolyte secondary battery with improved safety)				
IT Oxides (inorganic), uses				
RL: MOA (Modifier or additive use); USES (Uses) (nonaq. electrolyte secondary battery with improved safety)				
IT Polyolefins				
RL: TEM (Technical or engineered material use); USES (Uses) (nonaq. electrolyte secondary battery with improved safety)				
IT Polyimides, uses				
RL: TEM (Technical or engineered material use); USES (Uses) (polyimide; nonaq. electrolyte secondary battery with improved safety)				
IT Polyanides, uses				
RL: TEM (Technical or engineered material use); USES (Uses) (polyimide; nonaq. electrolyte secondary battery with improved safety)				
IT 9003-18-3D, hydrogenated				
RL: MOA (Modifier or additive use); USES (Uses) (nitrile rubber; nonaq. electrolyte secondary battery with improved safety)				
IT 815594-01-5, BM 400B				
RL: MOA (Modifier or additive use); USES (Uses) (nonaq. electrolyte secondary battery with improved safety)				
IT 7439-93-2, Lithium, uses				
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)				
(nonaq. electrolyte secondary battery with improved safety)				
IT 96-49-1, Ethylene carbonate	623-53-0,	Ethyl methyl carbonate		
1309-37-1, Ferric oxide, uses	1309-48-4,	Magnesium oxide (MgO), uses		
1312-43-2, Indium oxide (In203)	1314-13-2,	Zinc oxide (ZnO), uses		
1317-38-0, Copper oxide (CuO), uses	1344-28-1,	Alumina, uses		
7440-21-3D, Silicon, compound	7782-42-5,	Graphite, uses	12036-01-0,	
Zirconium oxide (ZrO <sub>2</sub> )	12137-20-1,	Titanium oxide (TiO <sub>2</sub> )	12190-79-3,	
Cobalt lithium oxide (CoLiO <sub>2</sub> )	12502-70-4,	Manganese oxide mno <sub>4</sub>		
18868-43-4, Molybdenum oxide (MoO <sub>3</sub> )	21324-40-3,	Lithium hexafluorophosphate	21651-19-4,	
		Tin oxide (SnO <sub>2</sub> )	120062-99-9,	Cobalt
				copper lithium nickel oxide
			142447-14-1,	Cobalt lithium manganese oxide
			(Co <sub>0.98</sub> LiMn <sub>0.02</sub> O <sub>2</sub> )	157616-77-8, Cobalt lithium tin oxide
				(Co <sub>0.98</sub> LiSn <sub>0.02</sub> O <sub>2</sub> )
			162023-33-8, Cobalt iron lithium oxide	
			(Co <sub>0.98</sub> Fe <sub>0.02</sub> LiO <sub>2</sub> )	177997-13-6, Aluminum cobalt lithium nickel oxide
				177997-14-7, Cobalt indium lithium nickel oxide
				177997-15-8, Cobalt lithium nickel tin oxide
				180997-14-2, Cobalt lithium magnesium nickel

oxide 182442-95-1, Cobalt lithium manganese nickel oxide 182442-96-2, Cobalt iron lithium nickel oxide 182442-97-3, Cobalt lithium nickel zinc oxide 191025-46-4, Cobalt lithium nickel zirconium oxide 193214-24-3, Aluminum cobalt lithium nickel oxide (A10.05Co0.15LiNi0.802) 193215-53-1, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.502) 198213-70-6, Cobalt lithium magnesium oxide (Co0.98LiMg0.02O2) 244304-20-9, Cobalt lithium nickel titanium oxide 244304-25-4, Cobalt lithium molybdenum nickel oxide 253875-50-2, Cobalt lithium titanium oxide (Co0.98LiTi0.02O2) 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 459409-01-9, Aluminum cobalt lithium oxide (A10.02Co0.98LiO2) 867249-10-3, Cobalt lithium zinc oxide (Co0.98LiZn0.02O2) 867249-16-9, Cobalt lithium molybdenum oxide (Co0.98LiMo0.02O2) 867249-18-1, Cobalt lithium zirconium oxide (Co0.98LiZr0.02O2) 896115-07-4 896115-08-5 896115-09-6 896115-10-9 896115-12-1 896115-13-2 896115-15-4 896115-16-5, Cobalt copper lithium oxide (Co0.98Cu0.02LiO2) 896115-17-6, Cobalt indium lithium oxide (Co0.98In0.02LiO2) 917108-92-0 917108-94-2  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (nonaq. electrolyte secondary battery with improved safety)

**AB** Disclosed is a non-aqueous electrolyte secondary battery including:  
 a pos. electrode having a pos. electrode material mixture containing a composite

lithium oxide; a neg. electrode; a polyolefin separator; a non-aqueous electrolyte; and a heat-resistant insulating layer interposed between the pos. and neg. electrodes. The pos. electrode material mixture has an estimated heat generation rate at 200° of not greater than 50 W/kg. The pos. electrode and the neg. electrode are wound together with the separator and the heat-resistant insulating layer interposed there between.

**L3 ANSWER 23 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN**  
**ACCESSION NUMBER:** 2006:1338029 CAPLUS <>LOGINID::20080630>>  
**DOCUMENT NUMBER:** 146:84649  
**TITLE:** Secondary nonaqueous electrolyte battery  
**INVENTOR(S):** Nagayama, Masatoshi; Nakashima, Takuya; Muraoka, Yoshiyuki; Takeuchi, Takashi  
**PATENT ASSIGNEE(S):** Matsushita Electric Industrial Co., Ltd., Japan  
**SOURCE:** PCT Int. Appl., 41pp.  
**DOCUMENT TYPE:** Patent  
**LANGUAGE:** Japanese  
**FAMILY ACC. NUM. COUNT:** 1  
**PATENT INFORMATION:**

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006134833	A1	20061221	WO 2006-JP311590	20060609
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2007027100	A	20070201	JP 2006-160800	20060609
CN 101133513	A	20080227	CN 2006-80006732	20070831

KR 2007112243 A 20071122 KR 2007-723042 20071009  
 PRIORITY APPLN. INFO.: JP 2005-173374 A 20050614  
 WO 2006-JP311590 W 20060609

TI Secondary nonaqueous electrolyte battery  
 IT Nitrile rubber, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (hydrogenated; secondary lithium batteries containing Li-Mn-Ni composite oxide in cathodes and porous heat-resistant layers)

IT Secondary batteries  
 (lithium; secondary lithium batteries containing Li-Mn-Ni composite oxide in cathodes and porous heat-resistant layers)

IT Acrylic rubber  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (modified; secondary lithium batteries containing Li-Mn-Ni composite oxide in cathodes and porous heat-resistant layers)

IT Battery cathodes  
 (secondary lithium batteries containing Li-Mn-Ni composite oxide in cathodes and porous heat-resistant layers)

IT 9003-18-3D, hydrogenated  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (nitrile rubber; secondary lithium batteries containing Li-Mn-Ni composite oxide in cathodes and porous heat-resistant layers)

IT 1344-28-1, Alumina, uses 7782-42-5, Graphite, uses 12031-75-3, Lithium manganese nickel oxide (LiMn<sub>1.5</sub>Ni<sub>0.504</sub>) 130811-81-3, Lithium manganese nickel oxide (LiMn<sub>1.6</sub>Ni<sub>0.404</sub>) 146956-42-5, Cobalt lithium manganese nickel oxide (Co<sub>0.4</sub>LiMn<sub>0.2</sub>Ni<sub>0.402</sub>) 176902-43-5, Lithium manganese nickel oxide (LiMn<sub>1.7</sub>Ni<sub>0.304</sub>) 261922-08-1, Lithium manganese nickel oxide (LiMn<sub>1.4</sub>Ni<sub>0.604</sub>) 390362-01-3, Cobalt lithium manganese nickel oxide (Co<sub>0.5</sub>LiMn<sub>0.25</sub>Ni<sub>0.2502</sub>) 468772-63-6, Cobalt lithium manganese nickel oxide (Co<sub>0.25</sub>LiMn<sub>0.38</sub>Ni<sub>0.3802</sub>) 479624-38-9, Cobalt lithium manganese nickel oxide (Co<sub>0.55</sub>LiMn<sub>0.22</sub>Ni<sub>0.2202</sub>) 632287-15-1, Cobalt lithium manganese nickel oxide (Co<sub>0.25</sub>LiMn<sub>0.5</sub>Ni<sub>0.2502</sub>) 864366-54-1, Cobalt lithium manganese nickel oxide (Co<sub>0.4</sub>LiMn<sub>0.4</sub>Ni<sub>0.202</sub>) 887268-43-1, Cobalt lithium manganese nickel oxide (Co<sub>0.4</sub>LiMn<sub>0.38</sub>Ni<sub>0.2502</sub>) 917474-88-5 917474-89-6, Cobalt lithium manganese nickel oxide (Co<sub>0.38</sub>LiMn<sub>0.38</sub>Ni<sub>0.2502</sub>) 917474-90-9, Cobalt lithium manganese nickel oxide (Co<sub>0.22</sub>LiMn<sub>0.22</sub>Ni<sub>0.5502</sub>) 917474-93-2, Cobalt lithium manganese nickel oxide (Co<sub>0.38</sub>LiMn<sub>0.25</sub>Ni<sub>0.3802</sub>) 917474-94-3, Cobalt lithium manganese nickel oxide (Co<sub>0.22</sub>LiMn<sub>0.55</sub>Ni<sub>0.2202</sub>) 917474-95-4 917474-96-5 917474-97-6 917474-98-7 917474-99-8 917475-00-4 917475-01-5 917475-02-6 917475-03-7 917475-04-8 917475-05-9 917475-06-0 917475-07-1, Lithium magnesium manganese nickel oxide (LiMg<sub>0.01</sub>Mn<sub>0.48</sub>Ni<sub>0.4802</sub>) 917475-08-2, Lithium manganese nickel titanium oxide (LiMn<sub>0.48</sub>Ni<sub>0.48</sub>Ti<sub>0.0102</sub>) 917475-11-7, Calcium lithium manganese nickel oxide (Ca<sub>0.01</sub>LiMn<sub>0.48</sub>Ni<sub>0.4802</sub>) 917475-13-9, Lithium manganese nickel strontium oxide (LiMn<sub>0.48</sub>Ni<sub>0.48</sub>Sr<sub>0.0102</sub>) 917475-15-1, Lithium manganese nickel zirconium oxide (LiMn<sub>0.48</sub>Ni<sub>0.48</sub>Zr<sub>0.0102</sub>) 917475-17-3, Lithium manganese nickel oxide (LiMn<sub>1.3</sub>Ni<sub>0.704</sub>) 917475-19-5, Lithium magnesium manganese nickel oxide (LiMg<sub>0.1</sub>Mn<sub>1.45</sub>Ni<sub>0.4504</sub>) 917475-20-8, Lithium magnesium manganese nickel oxide (LiMg<sub>0.2</sub>Mn<sub>1.4</sub>Ni<sub>0.404</sub>) 917475-21-9, Lithium magnesium manganese nickel oxide (LiMg<sub>0.3</sub>Mn<sub>1.35</sub>Ni<sub>0.3504</sub>) 917475-22-0, Lithium manganese nickel titanium oxide (LiMn<sub>1.45</sub>Ni<sub>0.45</sub>Ti<sub>0.104</sub>) 917475-25-3, Calcium lithium manganese nickel oxide (Ca<sub>0.1</sub>LiMn<sub>1.45</sub>Ni<sub>0.4504</sub>) 917475-26-4, Lithium manganese nickel strontium oxide (LiMn<sub>1.45</sub>Ni<sub>0.45</sub>Sr<sub>0.104</sub>) 917475-28-6, Lithium manganese nickel zirconium oxide (LiMn<sub>1.45</sub>Ni<sub>0.45</sub>Zr<sub>0.104</sub>)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (secondary lithium batteries containing Li-Mn-Ni composite oxide in cathodes and porous heat-resistant layers)

AB The battery has a cathode containing a cathode active mass layer, an

anode containing an anode active mass layer, and a nonaq. electrolyte solution; where the cathode active mass layer contains a lithium-containing metal oxide containing nickel as cathode mass, the area of the cathode active mass layer per unit battery capacity is within a range of 190-800 cm<sup>2</sup>/Ah, a porous heat-resistant layer is arranged between the cathode and the anode, and the amount ratio of the electrolyte solution to the area of the porous heat-resistant layer is 70-150 mL/m<sup>2</sup>.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 24 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 20061337432 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 146184643  
TITLE: Secondary lithium battery  
INVENTOR(S): Nakura, Kensuke  
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
SOURCE: PCT Int. Appl., 57pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006134851	A1	20061221	WO 2006-JP311709	20060612
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
JP 2006351378	A	20061228	JP 2005-176514	20050616
CN 101199065	A	20080611	CN 2006-80021309	20071214
KR 2008015034	A	20080215	KR 2007-730971	20071231
PRIORITY APPLN. INFO.:			JP 2005-176514	A 20050616
			WO 2006-JP311709	W 20060612

TI Secondary lithium battery  
IT Battery cathodes  
(cathodes containing lithium composite oxides for secondary lithium batteries)  
IT Secondary batteries  
(lithium; cathodes containing lithium composite oxides for secondary lithium batteries)  
IT 555-31-7, Aluminum triisopropoxide 1071-76-7, Zirconium tetra-n-butoxide 7785-87-7, Manganese sulfate 10026-12-7, Niobium pentachloride 10031-62-6, Tin sulfate 10043-35-3, Boric acid (H<sub>3</sub>BO<sub>3</sub>), reactions 13770-61-1, Indium nitrate 193214-53-8, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.1Ni0.75O2) 917475-57-1, Aluminum cobalt manganese nickel oxide (Al0.04Co0.15Mn0.01Ni0.8O2) 917475-58-2 917475-60-6 917475-62-8, Aluminum cobalt nickel niobium oxide (Al0.04Co0.15Ni0.8Nb0.01O2) 917475-64-0, Cobalt lithium nickel titanium oxide (Co0.15LiNi0.75Ti0.1O2) 917475-65-1, Cobalt lithium nickel niobium oxide (Co0.15LiNi0.75Nb0.1O2)  
RL: RCT (Reactant); RACT (Reactant or reagent)

(cathodes containing lithium composite oxides for secondary lithium batteries)

IT 96-49-1, Ethylene carbonate 462-06-6, Fluorobenzene 872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate 7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate 193214-24-3, Aluminum cobalt lithium nickel oxide (Al<sub>0.05</sub>Co<sub>0.15</sub>LiNi<sub>0.80</sub>)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathodes containing lithium composite oxides for secondary lithium batteries)

AB The battery has a chargeable cathode containing active mass particles which comprises a Li composite oxide, a chargeable anode, and a nonaq. electrolyte solution; where the Li composite oxide represented by: Li<sub>y</sub>Ni<sub>1-w-x-y-z</sub>CoxMgyMzO<sub>2</sub> (v = 0.85-1.25; 0 < w ≤ 0.75; 0 < x ≤ 0.1; 0 < y ≤ 0.1; z = 0-0.75; 0 < w+x+y+z ≤ 0.8, and M = element other than Co, Ca and Mg). (i) In the case where 0 < z, the element M contains ≥1 element Me selected from Mn, Al, B, W, Nb, Ta, In, Mo, Sn, Ti, Zr and Y, and ≥1 element Mc selected from Ca, Mg, and the element Me is found more in the surface layers than the inner portions of the active mass particles. (ii) In the case where 0 = z, ≥1 element Mc selected from the group consisting of Ca and Mg is found more in the surface layers than the inner portions of the active mass particles.

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 25 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:1333911 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 146:65791  
 TITLE: Secondary lithium battery using cathode active materials with high energy density  
 INVENTOR(S): Noguchi, Takehiro; Sho, Masaaki; Numata, Tatsuji  
 PATENT ASSIGNEE(S): Nec Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 18pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006344509	A	20061221	JP 2005-169741	20050609
PRIORITY APPLN. INFO.:			JP 2005-169741	20050609
TI Secondary lithium battery using cathode active materials with high energy density				
IT Battery cathodes				
			(lithium battery with reduced size and weight by using Li mixed oxide cathode active materials with high energy d.)	
IT Secondary batteries				
			(lithium; lithium battery with reduced size and weight by using Li mixed oxide cathode active materials with high energy d.)	
IT 128975-24-6, Lithium manganese nickel oxide (LiMn <sub>0.5</sub> Ni <sub>0.5</sub> 02)				
144973-42-2, Lithium manganese nickel oxide (LiMn <sub>0.3</sub> Ni <sub>0.7</sub> 02)				
170110-41-5, Cobalt lithium manganese nickel oxide (Co <sub>0.6</sub> LiMn <sub>0.2</sub> Ni <sub>0.2</sub> 02)				
176206-89-6, Cobalt lithium manganese nickel oxide (Co <sub>0.3</sub> LiMn <sub>0.2</sub> Ni <sub>0.5</sub> 02)				
179186-41-5, Lithium manganese nickel oxide (LiMn <sub>0.7</sub> Ni <sub>0.3</sub> 02)				
179186-42-6, Lithium manganese nickel oxide (LiMn <sub>0.6</sub> Ni <sub>0.4</sub> 02)				
179186-44-8, Lithium manganese nickel oxide (LiMn <sub>0.4</sub> Ni <sub>0.6</sub> 02)				
193215-96-2, Cobalt lithium manganese nickel oxide (Co <sub>0.2</sub> LiMn <sub>0.4</sub> Ni <sub>0.4</sub> 02)				
214473-76-4, Cobalt lithium manganese nickel oxide (Co <sub>0.9</sub> LiMn <sub>0.05</sub> Ni <sub>0.05</sub> 02)				
217309-43-8, Cobalt lithium manganese nickel oxide (Co <sub>0.3</sub> LiMn <sub>0.3</sub> Ni <sub>0.4</sub> 02)				

219317-00-7, Lithium manganese nickel oxide (Li<sub>1.1</sub>Mn<sub>0.45</sub>Ni<sub>0.45</sub>O<sub>2</sub>)  
 227623-78-1, Cobalt lithium manganese nickel oxide (Co<sub>0.7</sub>LiMn<sub>0.2</sub>Ni<sub>0.102</sub>)  
 227623-80-5, Cobalt lithium manganese nickel oxide (Co<sub>0.8</sub>LiMn<sub>0.1</sub>Ni<sub>0.102</sub>)  
 346417-97-8, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>) 390362-01-3, Cobalt lithium manganese nickel oxide (Co<sub>0.5</sub>LiMn<sub>0.25</sub>Ni<sub>0.25</sub>) 404904-11-6, Cobalt lithium manganese nickel oxide (Co<sub>0.4</sub>LiMn<sub>0.3</sub>Ni<sub>0.302</sub>) 405890-05-3, Cobalt lithium manganese nickel oxide (Co<sub>0.1</sub>LiMn<sub>0.45</sub>Ni<sub>0.45</sub>) 405890-08-6, Aluminum lithium manganese nickel oxide (Al<sub>0.1</sub>LiMn<sub>0.45</sub>Ni<sub>0.45</sub>) 427884-45-5, Lithium manganese nickel oxide (Li<sub>1.04</sub>Mn<sub>0.48</sub>Ni<sub>0.48</sub>) 479624-36-7, Cobalt lithium manganese nickel oxide (Co<sub>0.7</sub>LiMn<sub>0.15</sub>Ni<sub>0.15</sub>) 493394-61-9, Cobalt lithium manganese nickel oxide (Co<sub>0.3</sub>LiMn<sub>0.35</sub>Ni<sub>0.35</sub>)  
 541511-71-1, Lithium manganese nickel titanate oxide (LiMn<sub>0.49</sub>Ni<sub>0.49</sub>Ti<sub>0.02</sub>) 541511-72-2, Aluminum lithium manganese nickel oxide (Al<sub>0.02</sub>LiMn<sub>0.49</sub>Ni<sub>0.49</sub>) 541511-74-4, Lithium magnesium manganese nickel oxide (LiMg<sub>0.02</sub>Mn<sub>0.49</sub>Ni<sub>0.49</sub>) 579501-13-6, Cobalt lithium manganese nickel oxide (Co<sub>0.3</sub>LiMn<sub>0.5</sub>Ni<sub>0.202</sub>) 681160-59-8, Cobalt lithium manganese nickel oxide (Co<sub>0.3</sub>LiMn<sub>0.4</sub>Ni<sub>0.302</sub>) 823177-53-3, Cobalt lithium manganese nickel oxide (Co<sub>0.31</sub>Li<sub>1.07</sub>Mn<sub>0.31</sub>Ni<sub>0.3102</sub>) 865649-48-5  
 916896-11-2, Cobalt lithium manganese nickel oxide (Co<sub>0.7</sub>LiMn<sub>0.25</sub>Ni<sub>0.0502</sub>)  
 916896-13-4, Cobalt lithium manganese nickel oxide (Co<sub>0.7</sub>LiMn<sub>0.1</sub>Ni<sub>0.202</sub>)  
 916896-16-7, Cobalt lithium manganese nickel oxide (Co<sub>0.7</sub>LiMn<sub>0.05</sub>Ni<sub>0.2502</sub>)  
 916896-18-9 916896-19-0 916896-20-3, Aluminum cobalt lithium manganese nickel oxide (Al<sub>0.1</sub>Co<sub>0.7</sub>LiMn<sub>0.1</sub>Ni<sub>0.102</sub>)  
 916896-21-4 916896-22-5 916896-23-6  
 916896-24-7 916896-25-8 916896-26-9 916896-27-0  
 916896-28-1 916896-29-2, Cobalt lithium manganese nickel oxide (Co<sub>0.32</sub>Li<sub>1.04</sub>Mn<sub>0.32</sub>Ni<sub>0.3202</sub>) 916896-30-5 916896-31-6  
 916896-32-7 916896-33-8 916896-34-9  
 916896-35-0 916896-36-1, Lithium magnesium manganese nickel oxide (LiMg<sub>0.04</sub>Mn<sub>0.48</sub>Ni<sub>0.48</sub>) 916896-37-2, Aluminum lithium manganese nickel oxide (Al<sub>0.04</sub>LiMn<sub>0.48</sub>Ni<sub>0.48</sub>) 916896-38-3, Lithium manganese nickel oxide silicate (LiMn<sub>0.49</sub>Ni<sub>0.49</sub>O<sub>1.92</sub>(SiO<sub>4</sub>)<sub>0.02</sub>) 916896-39-4, Iron lithium manganese nickel oxide (Fe<sub>0.02</sub>LiMn<sub>0.49</sub>Ni<sub>0.49</sub>) 916896-40-7, Copper lithium manganese nickel oxide (Cu<sub>0.02</sub>LiMn<sub>0.49</sub>Ni<sub>0.49</sub>)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (lithium battery with reduced size and weight by using Li mixed oxide cathode active materials with high energy d.)

AB The battery contains cathode active materials of (1)  
 L<sub>1</sub>al(Co<sub>1-x1-y1-z1</sub>Nix1Mny1Mz1)O<sub>2</sub> (0 < al ≤ 1; x1 + y1 + z1 0.1-0.5;  
 x1, y1 ≥ 0.05; -0.2 ≤ x1 - y1 ≤ 0.2; z1 = 0-0.1; M1 =  
 Li, Mg, Al, Si, Fe, Ti, and/or Cu) and (2) L<sub>ia2</sub>(Co<sub>1-x2-y2-</sub>  
 z2Nix2Mny2Mz2)O<sub>2</sub> (0 < a2 ≤ 1; x2 + y2 + z2 = 0.6-1; -0.2 ≤  
 x2 - y2 ≤ 0.2; z2 = 0-0.1; M2 = Li, Mg, Al, Si, Fe, Ti, and/or Cu).  
 The battery can have reduced size and weight by virtue of the cathode-active materials of high energy d.

L3 ANSWER 26 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:1247981 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 146:84600  
 TITLE: Preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material  
 INVENTOR(S): Fang, Songsheng  
 PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China  
 SOURCE: Faming Zhanli Shenqing Gongkai Shuomingshu, 15pp.  
 CODEN: CNXXEV  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Chinese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1870330	A	20061129	CN 2005-10021014	20050527
PRIORITY APPLN. INFO.:			CN 2005-10021014	20050527
TI Preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material				
IT Oxides (inorganic), uses RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (multicomponent, mixed metal; preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material)				
IT Electric capacitance Electric potential (of assembled batteries; preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material)				
IT Battery cathodes Coprecipitation Heat treatment (preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material)				
IT Sulfates, reactions RL: RCT (Reactant); RACT (Reactant or reagent) (preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material)				
IT Hydroxides (inorganic) RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material)				
IT Particle size distribution (uniform; preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material)				
IT 7664-41-7DP, Ammonia, metal complexes RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (in buffer, preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material)				
IT 144-62-7, Oxalic acid, uses 7664-93-9, Sulfuric acid, uses 10043-35-3, Boric acid (H3BO3), uses RL: NUU (Other use, unclassified); USES (Uses) (preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material)				
IT 891484-55-2P 917391-75-4P 917391-76-5P 917391-77-6P 917391-78-7P 917391-79-8P RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (preparation and application of cobalt-nickel-containing multicomponent oxide as cathode material)				
IT 506-87-6, Ammonium carbonate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1310-66-3, Lithium hydroxide monohydrate 1310-73-2, Sodium hydroxide, reactions 7758-98-7, Copper sulfate, reactions 7778-18-9, Calcium sulfate 7783-20-2, Ammonium sulfate, reactions 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate 7790-69-4, Lithium nitrate 10043-01-3, Aluminum sulfate 10124-43-3, Cobalt sulfate 10124-49-9, Iron sulfate 13463-67-7, Titania, reactions				

17375-37-0, Manganese carbonate 18130-44-4, Titanium sulfate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation and application of cobalt-nickel-containing multicomponent  
oxide as

cathode material)

AB The title cobalt-nickel-containing multicomponent oxide has a formula of  $\text{Li}_a(\text{NiCoc})\text{M}_1\text{-}b\text{-cO}_2$  ( $M$  is selected from at least one of Fe, Al, Mn, Ti, Cu, and Ca;  $a = 0.97\text{-}1.07$ ;  $0.3 \leq b < 1$ ;  $0 < c \leq 0.5$ ; and  $0.8 \leq b + c < 1$ ). This multicomponent oxide is prepared by: (1) preparing mixed ammonia complex of nickel, cobalt, and other metal  $M$  in buffer solution, (2) simultaneously adding mixed ammonia complex and alkaline solution into a reactor, copptg. to obtain Ni-Co-M composite hydroxide, aging, separating, washing, and drying to obtain a precursor, and (3) mixing and grinding the obtained precursor and lithium hydroxide or lithium salt, and heat-treating to obtain the final product. The obtained multicomponent oxide has the advantages of uniform particle size distribution and high volume specific energy. This multicomponent oxide can be used as cathode material with the advantages of good slurry fluidity and uniformity, long slurry freezing storage period, good machinability of the obtained electrode piece, simple production process, and low cost.

L3 ANSWER 27 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:1235405 CAPLUS <>LOGINID::20080630>>

DOCUMENT NUMBER: 146:209577

TITLE: Improvement of electrochemical properties of  $\text{Li}[\text{Ni}_{0.4}\text{Co}_{0.2}\text{Mn}(0.4-x)\text{Mgx}]_{02-y}\text{Fy}$  cathode materials at high voltage region

AUTHOR(S): Shin, Ho-Suk; Shin, Dongwook; Sun, Yang-Kook

CORPORATE SOURCE: Department of Chemical Engineering, Center for Information and Communication Materials, Hanyang University, Seoul, 133-791, S. Korea

SOURCE: Electrochimica Acta (2006), 52(4), 1477-1482

CODEN: ELCAAV; ISSN: 0013-4686

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

TI Improvement of electrochemical properties of  $\text{Li}[\text{Ni}_{0.4}\text{Co}_{0.2}\text{Mn}(0.4-x)\text{Mgx}]_{02-y}\text{Fy}$  cathode materials at high voltage region

IT Battery cathodes  
(improvement of electrochem. properties of  $\text{Li}[\text{Ni}_{0.4}\text{Co}_{0.2}\text{Mn}(0.4-x)\text{Mgx}]_{02-y}\text{Fy}$  cathode materials for lithium batteries)

IT Secondary batteries  
(lithium; improvement of electrochem. properties of  $\text{Li}[\text{Ni}_{0.4}\text{Co}_{0.2}\text{Mn}(0.4-x)\text{Mgx}]_{02-y}\text{Fy}$  cathode materials for lithium batteries)

IT 193215-96-2, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.2}\text{LiMn}_{0.4}\text{Ni}_{0.402}$ )  
870827-49-9, Cobalt manganese nickel oxide ( $\text{Co}_{0.6}\text{Mn}_{1.2}\text{Ni}_{1.204}$ )  
921610-75-5 921610-76-6 921610-77-7 921610-78-8, Cobalt magnesium manganese nickel oxide ( $\text{Co}_{0.6}\text{Mg}_{0.12}\text{Mn}_{1.08}\text{Ni}_{1.204}$ )

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(improvement of electrochem. properties of  $\text{Li}[\text{Ni}_{0.4}\text{Co}_{0.2}\text{Mn}(0.4-x)\text{Mgx}]_{02-y}\text{Fy}$  cathode materials for lithium batteries)

AB Spherical  $\text{Li}[\text{Ni}_{0.4}\text{Co}_{0.2}\text{Mn}(0.4-x)\text{Mgx}]_{02-y}\text{Fy}$  ( $x = 0, 0.04, y = 0, 0.08$ ) with phase-pure and well-ordered layered structure were synthesized by heat-treatment of spherical  $[\text{Ni}_{0.4}\text{Co}_{0.2}\text{Mn}_{0.4-x}\text{Mgx}]_{304}$  precursors with  $\text{LiOH}\cdot\text{H}_2\text{O}$  and  $\text{LiF}$ . The average particle size of the powders was .apprx.10-15  $\mu\text{m}$  and the size distribution was narrow due to the homogeneity of the metal carbonate,  $[\text{Ni}_{0.4}\text{Co}_{0.2}\text{Mn}(0.4-x)\text{Mgx}]_{\text{CO}_3}$  ( $x = 0, 0.04$ ) precursors. Although the  $\text{Li}[\text{Ni}_{0.4}\text{Co}_{0.2}\text{Mn}_{0.36}\text{Mg}_{0.04}]_{01.92}\text{F}_{0.08}$  had a

lower initial discharge capacity, its capacity retention, interfacial resistance, and thermal stability were better than that of Li[Ni0.4Co0.2Mn0.4]O2 and Li[Ni0.4Co0.2Mn0.36Mg0.04]O2.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 28 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:1226992 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 146:10679  
TITLE: Manufacture of lithium-containing composite oxide for secondary lithium battery cathode  
INVENTOR(S): Saito, Naoshi; Ikemura, Masaaki; Kato, Tokumitsu; Kawahara, Keiichi  
PATENT ASSIGNEE(S): Seimi Chemical Co., Ltd., Japan  
SOURCE: PCT Int. Appl., 25pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006123710	A1	20061123	WO 2006-JP309849	20060517
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JE, KB, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BS, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
KR 2008090508	A	20080124	KR 2007-720735	20070910
CN 101176227	A	20080507	CN 2006-80016276	20071112
US 20080076027	A1	20080327	US 2007-942208	20071119
PRIORITY APPLN. INFO.:			JP 2005-144506	A 20050517
			WO 2006-JP309849	W 20060517
TI Manufacture of lithium-containing composite oxide for secondary lithium battery cathode				
IT Battery cathodes (manufacture of lithium-containing composite oxides for secondary lithium battery cathodes)				
IT 198213-69-3P, Cobalt lithium magnesium oxide (Co0.99LiMg0.01O2) 372492-00-7P, Aluminum cobalt lithium magnesium oxide (Al0.01Co0.98LiMg0.01O2) 477700-15-5P, Cobalt lithium oxide (Co0.99LiO2) 868842-82-4P 915275-61-5P				
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (manufacture of lithium-containing composite oxides for secondary lithium battery cathodes)				
AB The title composite oxide, represented by: LipNxMyOzFa (N is ≥1 element selected from Co, Mn and Ni; M is ≥1 element selected from transition metal elements other than N, Al and alkaline earth metal elements; and p = 0.9-1.2; 0.97 ≤ x < 1.0; 0 < y ≤ 0.03; z = 1.9-2.2; x + y = 1, and a = 0-0.02), is manufactured by firing a mixture containing a Li source, an element N source, an element M source, and if necessary a fluorine				

source in an oxygen-containing atmospheric; where a substance obtained by spraying an element M source-containing solution over a powder containing an element N source

while drying is used as the element N source and the element M source.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 29 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 20061225104 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 146:10675  
TITLE: Manufacture of lithium-containing composite oxide for cathode in secondary lithium battery  
INVENTOR(S): Saito, Naoshi; Kawasato, Takeshi; Kato, Tokumitsu; Horichi, Kazushige  
PATENT ASSIGNEE(S): Seimi Chemical Co., Ltd., Japan  
SOURCE: PCT Int. Appl., 26pp.  
CODEN: PIXKD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006123711	A1	20061123	WO 2006-JP309850	20060517
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
KR 2008009059	A	20080124	KR 2007-720736	20070910
CN 101176226	A	20080507	CN 2006-80016274	20071112
US 20080135802	A1	20080612	US 2007-940689	20071115
PRIORITY APPLN. INFO.:			JP 2005-144513	A 20050517
			WO 2006-JP309850	W 20060517
TI Manufacture of lithium-containing composite oxide for cathode in secondary lithium battery				
IT 372492-00-7P, Aluminum cobalt lithium magnesium oxide (Al <sub>0.01</sub> Co <sub>0.98</sub> LiMg <sub>0.01</sub> O <sub>2</sub> ) 866750-77-8P 915275-60-4P, Cobalt lithium magnesium oxide (Co <sub>0.99</sub> LiMg <sub>0.01</sub> O <sub>3</sub> ) 915275-61-5P RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (manufacture of lithium-containing composite oxides for secondary lithium battery cathodes)				
AB The title composite oxide is manufactured by firing a mixture containing a Li source, a N element source, a M element source, and optionally a fluorine source under an oxygen-containing atmospheric to produce a lithium-containing composite oxide represented by: LipNxMyOza (N is ≥1 element selected from Co, Mn and Ni; M represents ≥1 element selected from transition metal elements other than N, Al and alkaline earth metal elements; p = 0.9-1.2; x = 0.97-1.00; 0 < y ≤ 0.03; z = 1.9-2.2; x + y = 1; and a = 0-0.02); and				

characterized in that a material prepared by impregnating an N element source-containing powder with an M element source-containing solution and drying the

impregnated product as the N element source and M element source is used and that the firing is carried out in such a manner that first stage firing is carried out at 250-700° followed by second stage firing of the fired product at 850-1100°.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 30 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 20061176193 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 145:492273  
TITLE: Cathode active mass for secondary nonaqueous electrolyte battery  
INVENTOR(S): Takeuchi, Takashi; Taniguchi, Akihiro; Tsutsumi, Shuji; Nakura, Kensuke; Matsuno, Hiroshi; Sasaoka, Hideo; Matsumoto, Satoshi  
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan; Sumitomo Metal Mining Co., Ltd.  
SOURCE: PCT Int. Appl., 48pp.  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006118013	A1	20061109	WO 2006-JP308048	20060417
W: AB, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
JP 2006310181	A	20061109	JP 2005-133135	20050428
CN 101120464	A	20080206	CN 2006-80005048	20070815
KR 2007097115	A	20071002	KR 2007-718823	20070817
PRIORITY APPLN. INFO.:			JP 2005-133135	A 20050428
			WO 2006-JP308048	W 20060417

TI Cathode active mass for secondary nonaqueous electrolyte battery  
IT Battery cathodes  
(cathode active mass containing lithium aluminum nickel cobalt composite oxides with controlled particle size for secondary lithium batteries)  
IT 608139-20-4, Aluminum cobalt lithium nickel oxide (Al0.02Co0.15LiNi0.82O2) 867249-06-7 882214-40-6, Cobalt lithium nickel oxide (Co0.15LiNi0.84O2) 914612-79-6, Aluminum cobalt lithium nickel oxide (Al0.03Co0.15LiNi0.81O2) 914612-86-5, Aluminum cobalt lithium nickel oxide (Al0.03Co0.05LiNi0.91O2) 914612-88-7, Aluminum cobalt lithium nickel oxide (Al0.03Co0.1LiNi0.86O2) 914612-90-1, Aluminum cobalt lithium nickel oxide (Al0.03Co0.12LiNi0.84O2) 914612-92-3, Aluminum cobalt lithium nickel oxide (Al0.03Co0.2LiNi0.76O2) 914612-94-5, Aluminum cobalt lithium nickel oxide (Al0.03Co0.3LiNi0.66O2)

914612-96-7, Aluminum cobalt lithium nickel oxide (Al<sub>0.03</sub>Co<sub>0.35</sub>LiNi<sub>0.61</sub>O<sub>2</sub>)  
914612-97-8, Aluminum cobalt lithium nickel oxide (Al<sub>0.01</sub>Co<sub>0.15</sub>LiNi<sub>0.8</sub>O<sub>3</sub>O<sub>2</sub>)  
914612-98-9, Aluminum cobalt lithium nickel oxide (Al<sub>0.08</sub>Co<sub>0.15</sub>LiNi<sub>0.7</sub>O<sub>6</sub>O<sub>2</sub>)  
914612-99-0, Aluminum cobalt lithium nickel oxide (Al<sub>0.1</sub>Co<sub>0.15</sub>LiNi<sub>0.74</sub>O<sub>2</sub>)  
914613-00-6 914613-01-7 914613-02-8 914613-03-9, Aluminum  
cobalt lithium nickel oxide (Al<sub>0.03</sub>Co<sub>0.15</sub>Li<sub>0.97</sub>Ni<sub>0.81</sub>O<sub>2</sub>) 914613-04-0,  
Aluminum cobalt lithium nickel oxide (Al<sub>0.03</sub>Co<sub>0.15</sub>Li<sub>1.02</sub>Ni<sub>0.81</sub>O<sub>2</sub>)  
914613-05-1, Aluminum cobalt lithium nickel oxide  
(Al<sub>0.03</sub>Co<sub>0.15</sub>Li<sub>1.1</sub>Ni<sub>0.81</sub>O<sub>2</sub>)

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(cathode active mass containing lithium aluminum nickel cobalt composite  
oxides with controlled particle size for secondary lithium  
batteries)

AB The active mass comprises a Li-containing composite oxide:  
Li<sub>x</sub>Mn<sub>1-y</sub>-y-z-a-bCo<sub>y</sub>Al<sub>1-x</sub>Mn<sub>1-y</sub>Li<sub>z</sub>O<sub>2</sub> (M<sub>1</sub> is ≥1 element selected from Mn,  
Ti, Y, Nb, Mo and W; M<sub>2</sub> is ≥2 elements selected from Mg, Ca, Sr, Ba  
and Ra and containing at least Mg and Ca; x = 0.97-1.1; y = 0.05-0.35; z =  
0.005-0.1; a = 0.0001-0.05; and b = 0.0001-0.05); where the composite  
oxide comprises primary particles having average particle diameter of 0.1-3 µm  
and formed by secondary particles having average particle diameter of 8-20 µm.

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 31 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 20061066137 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 1457400989  
TITLE: Safety secondary lithium ion batteries  
showing high discharge capacity  
INVENTOR(S): Uchitomi, Kazutaka; Yamada, Masayuki; Ueda, Atsushi;  
Kishimi, Mitsuhiro; Kawai, Tetsuo  
PATENT ASSIGNEE(S): Hitachi Maxell Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 22pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006278322	A	20061012	JP 2006-52091	20060228
PRIORITY APPLN. INFO.:			JP 2005-57086	A 20050302
TI Safety secondary lithium ion batteries showing high discharge capacity				
IT Secondary batteries (lithium; safety secondary Li batteries with cathodes containing two kinds of Li compound oxides)				
IT Battery cathodes Battery electrolytes				
IT Safety (safety secondary Li batteries with cathodes containing two kinds of Li compound oxides)				
IT 827-52-1, Cyclohexylbenzene	1120-71-4, 1,3-Propanesultone			
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)				
IT 217309-43-8, Cobalt lithium manganese nickel oxide (Co <sub>0.3</sub> LiMn <sub>0.3</sub> Ni <sub>0.4</sub> O <sub>2</sub> ) 887115-95-9, Cobalt lithium manganese nickel oxide (Co <sub>0.2</sub> Li <sub>1.02</sub> Mn <sub>0.4</sub> Ni <sub>0.402</sub> ) 904299-06-5, Cobalt lithium manganese nickel oxide (Co <sub>0.32</sub> Li <sub>0.99</sub> Mn <sub>0.34</sub> Ni <sub>0.3402</sub> ) 911286-41-4				

- RL: DEV (Device component use); USES (Uses)  
     (layered; safety secondary Li batteries with cathodes containing  
     two kinds of Li compound oxides)
- IT 12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>) 136479-43-1, Lithium  
 magnesium manganese oxide (LiMg<sub>0.1</sub>Mn<sub>1.904</sub>)
- RL: DEV (Device component use); USES (Uses)  
     (spinel-type; safety secondary Li batteries with cathodes  
     containing two kinds of Li compound oxides)
- AB The batteries employ cathode active mass composed of (a) 40-80  
 weight% of layered Li Mn Ni Co oxides expressed by Li<sub>(1+δ)</sub>Mn<sub>x</sub>Ni<sub>y</sub>Co<sub>(1-x-y-z)</sub>Mn<sub>2</sub>O<sub>4</sub>(M = Ti, Zr, Nb, Mo, W, Al, Si, Ga, Ge, Sn; -0.15 < δ < 0.15; 0.1 < x ≤ 0.5; 0.6 < (x + y + z) ≤ 1.0; z = 0-0.1),  
 and (b) 20-60 weight% of spinel-type Li Mn oxides expressed by  
 Li<sub>(1+η)</sub>Mn<sub>(2-W)</sub>M'<sub>W</sub>O<sub>4</sub> (M' = Mg, Ca, Sr, Al, Ga, Zn, Cu; η = 0-0.2; w = 0-0.1), and the active mass layers have d. of 3.0-3.6 g/cm<sup>3</sup>. Preferably, cyclohexylbenzene and cyclic sulfur compds. are included in electrolytes of the batteries. The cathodes inhibit heat generation in charged state, so that the batteries achieve high safety.
- L3 ANSWER 32 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:1036379 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 145:400943  
 TITLE: Nonaqueous secondary batteries suppressing  
       capacitance drop on repeated cycles, their cathode  
       materials, and manufacture thereof  
 INVENTOR(S): Hisayoshi, Kanji  
 PATENT ASSIGNEE(S): Mitsubishi Materials Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006269308	A	20061005	JP 2005-87505	20050325
PRIORITY APPLN. INFO.:			JP 2005-87505	20050325
TI	Nonaqueous secondary batteries suppressing capacitance drop on repeated cycles, their cathode materials, and manufacture thereof			
IT	Battery cathodes Firing (heat treating) (layered oxide-based cathode materials for nonaq. secondary batteries suppressing capacitance drop on repeated cycles)			
IT	Secondary batteries (lithium; layered oxide-based cathode materials for nonaq. secondary batteries suppressing capacitance drop on repeated cycles)			
IT	911393-62-9P 911393-64-1P 911393-67-4P			
	RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (layered oxide-based cathode materials for nonaq. secondary batteries suppressing capacitance drop on repeated cycles)			
IT	911393-58-3P 911393-60-7P			
	RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent) (layered oxide-based cathode materials for nonaq. secondary batteries suppressing capacitance drop on repeated cycles)			
IT	1310-65-2, Lithium hydroxide 10141-05-6, Cobalt nitrate 10377-66-9, Manganese nitrate 13138-45-9, Nickel nitrate 13860-02-1, Titanium nitrate			

- RL: RCT (Reactant); RACT (Reactant or reagent)  
(layered oxide-based cathode materials for nonaq. secondary batteries suppressing capacitance drop on repeated cycles)
- AB The materials represented by  $\text{Li}[\text{Li}[(1-\text{x}-\text{y})/3]\text{Ni}_x\text{Co}_y\text{TzMn}_z(2-\text{x}-2\text{y}-3\text{z})/3]\text{O}_2$  [0.2 <  $\text{x}$  < 0.5; 0 <  $\text{y}$  < 0.2; 0 <  $\text{z}$   $\leq$  0.1; 1  $\geq$  (2 $\text{x}$  +  $\text{y}$ )] take layered structure. The materials are prepared by reacting aqueous solns. of Ni salts, Co salts, Ti salts, and Mn salts with strong aqueous alkali solns., oxidizing the resulting double hydroxides, mixing the resulting oxyhydroxides with Li compds., firing the mixts. in air (at 900–1100°).
- L3 ANSWER 33 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:1017302 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 147:98353  
TITLE: Effect of Co content on performance of  $\text{LiAl}_1/3-\text{xCoNi}_1/3\text{Mn}_1/3\text{O}_2$  compounds for lithium-ion batteries  
AUTHOR(S): Hu, Shao-Kang; Chou, Tse-Chuan; Hwang, Bing-Joe; Ceder, Gerbrand  
CORPORATE SOURCE: Department of Chemical Engineering, National Cheng-Kung University, Tainan, 701, Taiwan  
SOURCE: Journal of Power Sources (2006), 160(2), 1287–1293  
CODEN: JPSODZ; ISSN: 0378-7753  
PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English
- TI Effect of Co content on performance of  $\text{LiAl}_1/3-\text{xCoNi}_1/3\text{Mn}_1/3\text{O}_2$  compounds for lithium-ion batteries  
IT Secondary batteries  
(lithium, lithium-ion, cathodes; effect of Co content on performance of  $\text{LiAl}_1/3-\text{xCoNi}_1/3\text{Mn}_1/3\text{O}_2$  compds. for lithium-ion batteries)
- IT 7439-93-2, Lithium, uses 346417-97-8, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$ ) 894108-26-0 942228-83-3, Aluminum lithium manganese nickel oxide ( $\text{Al}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$ ) 942228-84-4 942228-85-5
- RL: TEM (Technical or engineered material use); USES (Uses)  
(effect of Co content on performance of  $\text{LiAl}_1/3-\text{xCoNi}_1/3\text{Mn}_1/3\text{O}_2$  compds. for lithium-ion batteries)
- AB Layered  $\text{LiAl}_1/3-\text{xCoNi}_1/3\text{Mn}_1/3\text{O}_2$  ( $0 \leq \text{x} \leq 1/3$ ) compds. were studied via the combination of computational and exptl. approach. The calculated voltage curve of  $\text{LiNi}_1/3\text{Al}_1/3\text{Mn}_1/3\text{O}_2$  compound is presented, indicating it is of great potential for a cathode material of lithium-ion batteries. Unfortunately, it was found that the  $\text{LiNi}_1/3\text{Al}_1/3\text{Mn}_1/3\text{O}_2$  compound without impurity phase could not be synthesized via a sol-gel process. To obtain a layered compound without impurity phase, partial of Al is replaced by Co in  $\text{LiNi}_1/3\text{Al}_1/3\text{Mn}_1/3\text{O}_2$  compound in this study. Layered  $\text{LiAl}_1/3-\text{xCoNi}_1/3\text{Mn}_1/3\text{O}_2$  ( $0 \leq \text{x} \leq 1/3$ ) compds. were synthesized via sol-gel reaction at 900 °C under a oxygen stream. Single phase of the  $\text{LiAl}_1/3-\text{xCoNi}_1/3\text{Mn}_1/3\text{O}_2$  in 1/6  $\leq \text{x} \leq 1/3$  region could be prepared successfully. The discharge capacity and conductivity increased with an increase in the Co-substitution content. The enhancement of the conductivity and phase purity by the introduction of Co content shows profound influence on the performance of the  $\text{LiAl}_1/3-\text{xCoNi}_1/3\text{Mn}_1/3\text{O}_2$  compds.
- REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 34 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:1011115 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 145:380338

TITLE: Secondary lithium battery and its manufacture  
 INVENTOR(S): Nakura, Kensuke  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 86pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006101138	A1	20060928	WO 2006-JP305730	20060322
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2006302880	A	20061102	JP 2006-81052	20060323
US 20080090150	A1	20080417	US 2007-794311	20070627
KR 2007102618	A	20071018	KR 2007-720706	20070910
CN 101147282	A	20080319	CN 2006-80009193	20070921
PRIORITY APPLN. INFO.:			JP 2005-84445	A 20050323
			WO 2006-JP305730	W 20060322
			WO 2006-JP5730	W 20060322

TI Secondary lithium battery and its manufacture  
 IT Secondary batteries  
     (lithium; structure and manufacture of secondary lithium batteries containing Li-Ni-Co composite oxides)  
 IT Battery cathodes  
     (structure and manufacture of secondary lithium batteries containing Li-Ni-Co composite oxides)  
 IT 193214-24-3P, Aluminum cobalt lithium nickel oxide (Al0.05Co0.15LiNi0.802)  
 863310-18-3P, Aluminum cobalt lithium nickel oxide  
 (Al0.05Co0.15Li1.03Ni0.802) 911011-38-6P, Cobalt lithium nickel oxide  
 (Co0.1Li1.03Ni0.902) 911011-39-7P, Cobalt lithium nickel oxide  
 (Co0.5Li1.03Ni0.502) 911011-40-0P 911011-41-1P 911011-42-2P  
 911011-43-3P  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
     (structure and manufacture of secondary lithium batteries containing Li-Ni-Co composite oxides)  
 IT 55070-72-9, Nickel hydroxide oxide  
 RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); FORM (Formation, nonpreparative); PROC (Process)  
     (structure and manufacture of secondary lithium batteries containing Li-Ni-Co composite oxides)  
 IT 1313-99-1DP, Nickel oxide (NiO), O deficient 7782-42-5P, Graphite, uses  
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
     (structure and manufacture of secondary lithium batteries containing Li-Ni-Co composite oxides)

IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-31-5, Tin, uses 7440-33-7, Tungsten, uses 7440-42-8, Boron, uses 7440-67-7, Zirconium, uses 7440-74-6, Indium, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (structure and manufacture of secondary lithium batteries containing Li-Ni-Co composite oxides)

IT 142-72-3, Magnesium acetate 1071-76-7 6074-84-6, Pentaethoxy tantalum 7785-87-7, Manganese sulfate 10031-62-6, Tin sulfate 11120-01-7, Sodium tungstate 12027-67-7, Ammonium molybdate 13770-61-1, Indium nitrate 53569-73-6, Niobium chloride (Nb<sub>2</sub>C<sub>15</sub>)  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (structure and manufacture of secondary lithium batteries containing Li-Ni-Co composite oxides)

AB The battery has a cathode containing active mass particles, an anode, and a nonaq. electrolyte solution; where the active mass particles contains a 1st Li-Ni composite oxide: Li<sub>x</sub>Ni<sub>1-y-z</sub>CoyMzO<sub>2</sub> (Me = Al, Mn, Ti, Mg, and/or Ca; x = 0.85-1.25; 0 < y ≤ 0.5; z = 0-0.5; and 0 < y+z ≤ 0.75) which constitutes at least core portion of each particle; and the surface portion of each active mass particle contains a nickel oxide having a NaCl-type crystal structure or a 2nd Li-Ni composite oxide, and further contains an element M which is ≥1 element selected from Al, Mn, Mg, B, Zr, W, Nb, Ta, In, Mo and Sn, and not included in the crystal structure of the 1st composite oxide. A method for manufacturing the above battery is also disclosed.

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 35 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:978117 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 145:360090  
 TITLE: Secondary nonaqueous electrolyte battery  
 INVENTOR(S): Kasamatsu, Shinji; Nishino, Hajime; Takezawa, Hideharu  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 43pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006098216	A1	20060921	WO 2006-JP304597	20060309
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2006294597	A	20061026	JP 2006-65350	20060310
CN 101111956	A	20080123	CN 2006-80003623	20070731
KR 2007103074	A	20071022	KR 2007-721166	20070914
PRIORITY APPLN. INFO.:			JP 2005-76817	A 20050317

- TI Secondary nonaqueous electrolyte battery  
 IT Polyamide fibers, uses  
   RL: DEV (Device component use); USES (Uses)  
     (aramid; cathodes having Al-containing lithium composite oxides and separators having Cl-containing heat-resistant resins for secondary lithium batteries)
- IT Battery cathodes  
 Secondary batteries  
 Secondary battery separators  
   (cathodes having Al-containing lithium composite oxides and separators having Cl-containing heat-resistant resins for secondary lithium batteries)
- IT Polyimides, uses  
   RL: DEV (Device component use); USES (Uses)  
     (polyimide-; cathodes having Al-containing lithium composite oxides and separators having Cl-containing heat-resistant resins for secondary lithium batteries)
- IT Polyamides, uses  
   RL: DEV (Device component use); USES (Uses)  
     (polyimide-; cathodes having Al-containing lithium composite oxides and separators having Cl-containing heat-resistant resins for secondary lithium batteries)
- IT 7440-21-3, Silicon, uses 7782-42-5, Graphite, uses 9002-88-4,  
 Polyethylene 146021-77-4, Silicon oxide (SiO<sub>2</sub>) 198213-59-1, Aluminum cobalt lithium oxide (Al0.05Coo.95Li02) 309933-32-2, Cobalt lithium oxide (CoLi1.02O2) 536977-01-2, Aluminum cobalt lithium magnesium oxide (Al0.05Coo.93LiMg0.02O2) 909785-96-2, Cobalt lithium manganese nickel oxide (Co0.33Li1.01Mn0.33Ni0.34O2) 910211-15-3, Aluminum cobalt lithium oxide (Al0.05Coo.95Li1.02O2) 910211-16-4, Aluminum cobalt lithium oxide (Al0.2Co0.8Li1.02O2) 910211-17-5, Aluminum cobalt lithium oxide (Al0.25Co0.75Li1.02O2) 910211-18-6, Aluminum cobalt iron lithium oxide (Al0.05Coo.9Fe0.05Li1.02O2) 910211-19-7, Aluminum cobalt lithium oxide (Al0.05Coo.95Li1.098O2) 910211-20-0, Aluminum cobalt lithium oxide (Al0.05Coo.95Li1.05O2) 910211-21-1, Aluminum cobalt lithium oxide (Al0.05Coo.95Li1.08O2) 910211-22-2, Cobalt lithium magnesium oxide (Co0.98Li1.02Mg0.02O2) 910211-23-3, Aluminum cobalt lithium magnesium oxide (Al0.05Coo.93Li1.02Mg0.02O2) 910211-24-4, Aluminum cobalt lithium magnesium oxide (Al0.2Co0.78Li1.02Mg0.02O2) 910211-25-5, Aluminum cobalt lithium magnesium oxide (Al0.21Co0.77Li1.02Mg0.02O2) 910211-26-6, Aluminum cobalt lithium oxide (Al0.05Coo.94Li1.02O2) 910211-27-7, Aluminum cobalt lithium magnesium oxide (Al0.05Coo.85Li1.02Mg0.102) 910211-28-8, Aluminum cobalt lithium magnesium oxide (Al0.05Coo.8Li1.02Mg0.15O2) 910211-29-9, Aluminum cobalt lithium magnesium oxide (Al0.05Coo.93Li1.098Mg0.02O2) 910211-30-2, Aluminum cobalt lithium magnesium oxide (Al0.05Coo.93Li1.05Mg0.02O2) 910211-31-3, Aluminum cobalt lithium magnesium oxide (Al0.05Coo.93Li1.08Mg0.02O2) 910211-32-4 910211-33-5 910211-34-6 910211-35-7 910211-36-8 910211-37-9 910211-38-0 910211-39-1 910211-40-4 910211-41-5 910211-42-6 910211-43-7 910211-44-8 910211-45-9 910211-46-0 910211-47-1 910211-48-2 910211-49-3  
   RL: DEV (Device component use); USES (Uses)  
     (cathodes having Al-containing lithium composite oxides and separators having Cl-containing heat-resistant resins for secondary lithium batteries)
- IT 113443-18-8, Silicon oxide (SiO<sub>2</sub>)  
   RL: TEM (Technical or engineered material use); USES (Uses)  
     (cathodes having Al-containing lithium composite oxides and separators having Cl-containing heat-resistant resins for secondary lithium

batteries)

AB The battery has a cathode containing a cathode active mass, an anode containing an anode active mass, an electrolyte solution, and a separator; where the separator contains a heat-resistant resin having a Cl atom as a terminal group and the cathode active mass contains a Li-containing composite oxide having an Al atom in the composition

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 36 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:958625 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 1461:209557  
TITLE: Synthesis and electrochemical properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode materials prepared by the sol-gel method  
AUTHOR(S): Liao, Li; Wang, Xianyou; Luo, Xufang; Wang, Ximing; Gamboa, Sergio; Sebastian, P. J.  
CORPORATE SOURCE: College of Chemistry, Xiangtan University, Hunan, 411105, Peop. Rep. China  
SOURCE: Journal of Power Sources (2006), 160(1), 657-661  
CODEN: JPSODZ; ISSN: 0378-7753  
PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
TI Synthesis and electrochemical properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode materials prepared by the sol-gel method  
IT Secondary batteries  
(lithium; sol-gel synthesis and electrochem. properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode material for lithium batteries)  
IT Battery cathodes  
Sol-gel processing  
(sol-gel synthesis and electrochem. properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode material for lithium batteries)  
IT 923290-08-8DP, oxygen-deficient 923290-08-8P  
923290-09-9P 923290-10-2P 923290-11-3P  
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(sol-gel synthesis and electrochem. properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode material for lithium batteries)  
AB The cathode-active material, layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz ( $0 \leq z \leq 0.1$ ), was synthesized from a sol-gel precursor at 900° in air. The influence of Al-F co-substitution on the structural and electrochem. properties of the as-prepared samples was characterized by XRD, SEM and electrochem. expts. Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz has a typical hexagonal structure with a single phase, the particle size of the samples increases with increasing F content. Li[Ni0.333Co0.333Mn0.293Al0.04]O1.95F0.05 showed improved cathodic behavior and discharge capacity retention compared to the undoped samples in the voltage range of 3.0-4.3 V. The electrodes prepared from Li[Ni0.333Co0.333Mn0.293Al0.04]O1.95F0.05 delivered an initial discharge capacity of 158 mA-h/g and the initial coulombic efficiency is 91.3%. The capacity retention at the 20th cycle was 94.9%. Though the F-doped samples had lower initial capacities, they showed better cycle performance than the F-free material. This is a promising material for Li-ion batteries.

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS

## RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 37 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:899805 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 146:424848  
 TITLE: The improved physical and electrochemical performance of LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub> cathode materials by the Cr doping for lithium ion batteries  
 AUTHOR(S): Sun, Yucheng; Xia, Yonggao; Noguchi, Hideyuki  
 CORPORATE SOURCE: Venture Business Laboratory, Saga University, Saga, 840-8520, Japan  
 SOURCE: Journal of Power Sources (2006), 159(2), 1377-1382  
 CODEN: JPSODZ; ISSN: 0378-7753  
 PUBLISHER: Elsevier B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 TI The improved physical and electrochemical performance of LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub> cathode materials by the Cr doping for lithium ion batteries  
 IT Battery cathodes  
 (improved LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub> cathode materials for lithium ion batteries)  
 IT Secondary batteries  
 (lithium; improved LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub> cathode materials for lithium ion batteries)  
 IT 493394-61-9, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.35Ni0.35O<sub>2</sub>)  
 934167-60-9 934167-61-0  
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (improved LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub> cathode materials for lithium ion batteries)  
 AB Layered structure LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub> with different Cr content was prepared by co-precipitation XRD, SEM, BET and electrochem. tests were used to characterize the phys. and electrochem. properties of LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub>. SEM showed that the addition of Cr changes the morphologies of their particles and increased the size of grains. The sp. surface area of LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub> decreases linearly from 4.9 m<sup>2</sup>/g ( $x = 0$ ) to 1.8 m<sup>2</sup>/g ( $x = 0.1$ ) with increasing of Cr content. Cr doping improves the d. of the powder which is beneficial to solve the problem of lower electrode d. for these layered LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub> cathode materials. Electrochem. tests indicated that the cycling performance of LiNi0.35Co0.3-xCr<sub>x</sub>Mn0.35O<sub>2</sub> improves with increasing Cr content, although the initial discharge capacity of the sample decreases somewhat.  
 REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 38 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:890539 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 145:274868  
 TITLE: Method of preparation of cathode active material for nonaqueous electrolyte secondary battery  
 INVENTOR(S): Saito, Takaya  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 11pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20060194114	A1	20060831	US 2006-356112	20060217
JP 2006236886	A	20060907	JP 2005-52813	20050228
PRIORITY APPLN. INFO.:				
TI Method of preparation of cathode active material for nonaqueous electrolyte secondary battery				
IT Secondary batteries (lithium; method of preparation of cathode active material for nonaq. electrolyte secondary battery)				
IT Battery cathodes (method of preparation of cathode active material for nonaq. electrolyte secondary battery)				
IT 497-19-8, Sodium carbonate, uses 554-13-2, Lithium carbonate 10437-38-4, Lithium sodium carbonate RL: DEV (Device component use); USES (Uses) (coating; method of preparation of cathode active material for nonaq. electrolyte secondary battery)				
IT 144-55-8, Sodium hydrogen carbonate, uses 5006-97-3, Lithium hydrogen carbonate RL: DEV (Device component use); USES (Uses) (method of preparation of cathode active material for nonaq. electrolyte secondary battery)				
IT 346417-97-8P, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 500912-67-4P, Cobalt lithium manganese nickel oxide (Co0.33Li1.05Mn0.33Ni0.33O2) 877120-70-2P, Cobalt lithium manganese nickel oxide (Co0.3Li1.05Mn0.35Ni0.35O2) 906548-30-9P, Cobalt lithium manganese nickel oxide (Co0.33Li1.12Mn0.33Ni0.33O2) 906548-31-0P, Cobalt lithium manganese nickel oxide (Co0.1Li1.05Mn0.33Ni0.57O2) 906548-32-1P, Cobalt lithium manganese nickel oxide (Co0.35Li1.05Mn0.32Ni0.33O2) 906548-33-2P, Cobalt lithium manganese nickel oxide (Co0.33Li1.05Mn0.01Ni0.66O2) 906548-34-3P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.15Li1.01Ni0.82O2) 906548-35-4P, Cobalt lithium nickel titanium oxide (Co0.15Li1.01Ni0.82Ti0.03O2) 906548-36-5P, Cobalt lithium magnesium nickel oxide (Co0.15Li1.01Mg0.03Ni0.82O2) 906548-38-7P, Cobalt lithium molybdenum nickel oxide (Co0.15Li1.01Mo0.03Ni0.82O2) 906548-39-8P, Cobalt lithium nickel yttrium oxide (Co0.15Li1.01Ni0.82Y0.03O2) 906548-41-2P, Cobalt lithium nickel zirconium oxide (Co0.15Li1.01Ni0.82Zr0.03O2) 906548-43-4P RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (method of preparation of cathode active material for nonaq. electrolyte secondary battery)				
IT 9000-11-7, Carboxymethyl cellulose 9004-32-4, Sodium Carboxymethyl cellulose 9004-42-6, Carboxyethyl cellulose RL: MOA (Modifier or additive use); USES (Uses) (method of preparation of cathode active material for nonaq. electrolyte secondary battery)				
AB A non-aqueous electrolyte secondary battery includes: a pos. electrode including a pos. active material made of a transition-metal-containing complex oxide capable of intercalating lithium ions; a non-aqueous electrolytic solution; and a neg. electrode for intercalating and de-intercalating the lithium ions. Provided on the surface of the lithium-containing complex oxide are Li <sub>2</sub> CO <sub>3</sub> , M <sub>1</sub> 2CO <sub>3</sub> , and at least one kind of mols. selected from a group represented by R-COOM <sub>2</sub> . M <sub>1</sub> is at least one kind of elements selected from a group consisting of H, Na, and Li. Li <sub>2</sub> CO <sub>3</sub> is excluded from M <sub>1</sub> 2CO <sub>3</sub> . R is at least one kind of functional groups selected from a group consisting of alkyl group, alkenyl group, and alkynyl group. M <sub>2</sub> is at least one kind of elements selected from a group consisting of H, Na, and Li.				

L3 ANSWER 39 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:870014 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 145:474678  
TITLE: Effect of structural and electrochemical properties of different Cr-doped contents of Li[Ni<sub>1</sub>/3Mn<sub>1</sub>/3Co<sub>1</sub>/3]O<sub>2</sub>  
AUTHOR(S): Guo, Jian; Jiao, Li Fang; Yuan, HuaTang; Wang, Li Qin;  
Li, Hai Xia; Zhang, Ming; Wang, Yong Mei  
CORPORATE SOURCE: Institute of New Energy Material Chemistry, Nankai University, Tianjin, 300071, Peop. Rep. China  
SOURCE: Electrochimica Acta (2006), 51(28), 6275-6280  
CODEN: ELCAAV; ISSN: 0013-4686  
PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
TI Effect of structural and electrochemical properties of different Cr-doped contents of Li[Ni<sub>1</sub>/3Mn<sub>1</sub>/3Co<sub>1</sub>/3]O<sub>2</sub>  
IT Battery cathodes  
(effect of structural and electrochem. properties of Cr-doped Li[Ni<sub>1</sub>/3Mn<sub>1</sub>/3Co<sub>1</sub>/3]O<sub>2</sub> cathode material for lithium batteries)  
IT Secondary batteries  
(lithium; effect of structural and electrochem. properties of Cr-doped Li[Ni<sub>1</sub>/3Mn<sub>1</sub>/3Co<sub>1</sub>/3]O<sub>2</sub> cathode material for lithium batteries)  
IT 346417-97-8, Cobalt lithium manganese nickel oxide  
(Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>) 913655-43-3 913655-44-4  
913655-45-5 913655-46-6  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(effect of structural and electrochem. properties of Cr-doped Li[Ni<sub>1</sub>/3Mn<sub>1</sub>/3Co<sub>1</sub>/3]O<sub>2</sub> cathode material for lithium batteries)  
AB Layered Li[Ni(1-x)/3Mn(1-x)/3Co(1-x)/3Cr<sub>x</sub>]O<sub>2</sub> materials with x = 0, 0.01, 0.02, 0.03, 0.05 were prepared by solid-state pyrolysis. The oxides with various Cr contents were calcined and this resulted in greater difference in morphol. (shape, particle size and sp. surface area) and electrochem. (1st charge profile, reversible capacity and rate capability) differences. The Li[Ni(1-x)/3Mn(1-x)/3Co(1-x)/3Cr<sub>x</sub>]O<sub>2</sub> powders were characterized by XRD, charge/discharge cycling, cyclic voltammetry and SEM. XRD revealed that Li[Ni(1-x)/3Mn(1-x)/3Co(1-x)/3Cr<sub>x</sub>]O<sub>2</sub> with x = 0, 0.01, 0.02, 0.03, and 0.05 crystallized in a layered  $\alpha$ -NaFeO<sub>2</sub> structure. The 1st sp. discharge capacity and coulombic efficiency of electrodes with Cr-doped materials were higher than that with pristine material. When x = 0.02 the sample showed the highest 1st discharge capacity of 241.9 mA·h/g at a c.d. of 30 mA/g in the voltage range 2.3-4.6 V. The Cr-doped samples exhibited higher discharge capacity and better cycleability under medium and high current densities at room temperature  
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 40 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:759813 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 145:214300  
TITLE: Secondary nonaqueous electrolyte batteries containing lithium manganese nickel cobalt mixed oxide cathode active mass particles  
INVENTOR(S): Yamada, Masayuki; Uchitomi, Kazutaka; Ueda, Atsushi; Kawai, Tetsuo; Hashimoto, Hiroshi  
PATENT ASSIGNEE(S): Hitachi Maxell Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006202647	A	20060803	JP 2005-14483	20050121
PRIORITY APPLN. INFO.: JP 2005-14483 20050121				
TI Secondary nonaqueous electrolyte batteries containing lithium manganese nickel cobalt mixed oxide cathode active mass particles				
IT Battery cathodes (nonaq. electrolyte batteries containing Li-Mn-Ni-Co-M oxide cathode active mass particles with composition distribution for high capacity and safety)				
IT 904301-28-6 904301-30-0 904301-32-2 904301-34-4				
904301-36-6 904301-38-8 904301-39-9 904301-40-2				
904301-41-3 904301-42-4 904301-43-5 904301-44-6				
904301-45-7 904301-46-8 904301-47-9 904301-48-0				
RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte batteries containing Li-Mn-Ni-Co-M oxide cathode active mass particles with composition distribution for high capacity and safety)				
AB The disclosed batteries contain cathode active mass particles with a composition represented by $Li(1+\delta)MnxNi y Co(1-x-y-z)MzO2$ [ $M = Ti, Zr, Nb, Mo, W, Al, Si, Ga, Ge Sn; -0.15 < \delta < 0.15; 0.1 < x \leq 0.5; 0.6 < x + y + z \leq 1.0; 0.9 < x/y < 1.1; 0 < z \leq 0.1$ ], and the atomic ratio of M to Mn, Ni, and Co in the particle surface (a) is higher than the average atomic ratio of M to Mn, Ni, and Co in the whole particle [ $z/(1-z)$ ]. The batteries have high capacity, safety, excellent high-voltage cycling performance, and storage stability.				

L3 ANSWER 41 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:635277 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 145:106823  
 TITLE: Secondary nonaqueous electrolyte battery  
 INVENTOR(S): Nishino, Hajime; Kasamatsu, Shinji; Takezawa, Hideharu; Okamura, Kazuhiro; Shimada, Mikinari  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 39 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 3  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006068143	A1	20060629	WO 2005-JP23373	20051220
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
WO 2007072595	A1	20070628	WO 2006-JP312574	20060623
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,				

GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,  
 KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,  
 MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU,  
 SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,  
 US, UZ, VC, VN, ZA, ZM, ZW  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
 IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,  
 CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,  
 GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM  
 WO 2007072596 A1 20070628 WO 2006-JP312575 20060623  
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,  
 CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,  
 GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,  
 KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN,  
 MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU,  
 SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,  
 US, UZ, VC, VN, ZA, ZM, ZW  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
 IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,  
 CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,  
 GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM  
 EP 1819008 A1 20070815 EP 2006-767225 20060623  
 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
 IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL,  
 BA, HR, MK, YU  
 CN 101069305 A 20071107 CN 2006-80001303 20060623  
 EP 1881545 A1 20080123 EP 2006-767224 20060623  
 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
 IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL,  
 BA, HR, MK, YU  
 KR 2007088678 A 20070829 KR 2007-712821 20070607  
 KR 2007098797 A 20071005 KR 2007-712936 20070608  
 CN 101160683 A 20080409 CN 2006-80001390 20070608  
 PRIORITY APPLN. INFO.:  
 TI Secondary nonaqueous electrolyte battery  
 IT Polyamide fibers, uses  
 RL: DEV (Device component use); USES (Uses)  
     (aramid; structure of secondary lithium batteries having Li  
     composite oxide-containing cathode mixts. with controlled heat generation  
     rate)  
 IT Nitrile rubber, uses  
 RL: DEV (Device component use); USES (Uses)  
     (hydrogenated; structure of secondary lithium batteries  
     having Li composite oxide-containing cathode mixts. with controlled heat  
     generation rate)  
 IT Secondary batteries  
     (lithium; structure of secondary lithium batteries having Li  
     composite oxide-containing cathode mixts. with controlled heat generation  
     rate)  
 IT Battery cathodes  
     (structure of secondary lithium batteries having Li composite  
     oxide-containing cathode mixts. with controlled heat generation rate)  
 IT 9003-18-3D, hydrogenated  
 RL: DEV (Device component use); USES (Uses)  
     (nitrile rubber; structure of secondary lithium batteries  
     having Li composite oxide-containing cathode mixts. with controlled heat

generation rate)

IT 96-49-1, Ethylene carbonate 623-53-0, Methyl ethyl carbonate  
 1344-28-1, Alumina, uses 7782-42-5, Graphite, uses 12190-79-3, Cobalt  
 lithium oxide (CoLiO<sub>2</sub>) 21324-40-3, Lithium hexafluorophosphate  
 142447-14-1, Cobalt lithium manganese oxide (Co<sub>0.98</sub>LiMn<sub>0.02</sub>O<sub>2</sub>)  
 157616-77-8, Cobalt lithium tin oxide (Co<sub>0.98</sub>LiSn<sub>0.02</sub>O<sub>2</sub>) 162023-33-8,  
 Cobalt iron lithium oxide (Co<sub>0.98</sub>Fe<sub>0.02</sub>LiO<sub>2</sub>) 193214-24-3, Aluminum  
 cobalt lithium nickel oxide (Al<sub>0.05</sub>Co<sub>0.15</sub>LiNi<sub>0.80</sub>) 193215-53-1, Cobalt  
 lithium manganese nickel oxide (Co<sub>0.2</sub>LiMn<sub>0.3</sub>Ni<sub>0.50</sub>) 198213-70-6, Cobalt  
 lithium magnesium oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) 253875-50-2, Cobalt lithium  
 titanium oxide (Co<sub>0.98</sub>LiTi<sub>0.02</sub>O<sub>2</sub>) 346417-97-8, Cobalt lithium manganese  
 nickel oxide (Co<sub>0.3</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 459409-01-9, Aluminum cobalt  
 lithium oxide (Al<sub>0.02</sub>Co<sub>0.98</sub>LiO<sub>2</sub>) 867249-10-3, Cobalt lithium zinc oxide  
 (Co<sub>0.98</sub>LiZn<sub>0.02</sub>O<sub>2</sub>) 867249-16-9, Cobalt lithium molybdenum oxide  
 (Co<sub>0.98</sub>LiMo<sub>0.02</sub>O<sub>2</sub>) 867249-18-1, Cobalt lithium zirconium oxide  
 (Co<sub>0.98</sub>LiZr<sub>0.02</sub>O<sub>2</sub>) 896115-07-4 896115-08-5  
 896115-09-6 896115-10-9 896115-12-1 896115-13-2  
 896115-14-3 896115-15-4 896115-16-5, Cobalt copper lithium oxide  
 (Co<sub>0.98</sub>Cu<sub>0.02</sub>LiO<sub>2</sub>) 896115-17-6, Cobalt indium lithium oxide  
 (Co<sub>0.98</sub>In<sub>0.02</sub>LiO<sub>2</sub>)

RL: DEV (Device component use); USES (Uses)  
 (structure of secondary lithium batteries having Li composite  
 oxide-containing cathode mixts. with controlled heat generation rate)

IT 1309-37-1, Iron oxide (Fe<sub>2</sub>O<sub>3</sub>), uses 1309-48-4, Magnesium oxide (MgO),  
 uses 1312-43-2, Indium oxide (In<sub>2</sub>O<sub>3</sub>) 1314-13-2, Zinc oxide (ZnO), uses  
 1317-38-0, Copper oxide (CuO), uses 12036-01-0, Zirconium oxide (ZrO)  
 12137-20-1, Titanium oxide (TiO) 12502-70-4, Manganese oxide (MnO<sub>4</sub>)  
 18868-43-4, Molybdenum oxide (MoO<sub>2</sub>) 21651-19-4, Tin oxide (SnO)  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (structure of secondary lithium batteries having Li composite  
 oxide-containing cathode mixts. with controlled heat generation rate)

AB The battery comprises a cathode having a Li composite  
 oxide-containing cathode mixture on a cathode collector, an anode containing a  
 Li-intercalating material, a separator containing a polyolefin resin, a nonaq.  
 electrolyte solution, and a heat-resistant insulating layer interposed  
 between the 2 electrodes; where The estimated heat generation rate of the  
 cathode mixture at 200° is ≤50 W/kg; and the estimated heat  
 generation rate is determined by determining the relationship between an  
 absolute temperature T  
 and a heat generation rate V of the cathode mixture with an accelerated rate  
 calorimeter or an uncontrollable reaction measuring device (ARC), plotting  
 the relationship between the reciprocal of the absolute temperature T as X  
 axis and  
 the logarithm of the heat generation rate V as Y axis according to the  
 Arrhenius theorem, determining an approx. straight line matched with the plot  
 present in the heat generation region of T < 200° (473 K), and  
 extrapolating the approx. straight line to the temperature axis of T =  
 200° (473 K).

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 42 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:593746 CAPLUS <>  
 DOCUMENT NUMBER: 145:380300  
 TITLE: Method for preparing Mn-Co-Ni-containing lithium oxide  
 composite used in rechargeable lithium ion  
 battery  
 INVENTOR(S): Fang, Songsheng; Lin, Yunqing; Wang, Shoufeng; Zeng,  
 Pengcheng  
 PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China  
 SOURCE: Faming Zhanli Shenqing Gongkai Shuomingshu, 13 pp.

DOCUMENT TYPE: Patent  
 LANGUAGE: Chinese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1787258	A	20060614	CN 2004-10081451	20041207
PRIORITY APPLN. INFO.:			CN 2004-10081451	20041207
TI	Method for preparing Mn-Co-Ni-containing lithium oxide composite used in rechargeable lithium ion battery			
IT	Battery cathodes (lithium ion battery; preparation of Li-Mn-Co-Ni oxide composite type cathode active material for)			
IT	1310-65-2, Lithium hydroxide 1310-73-2, Sodium hydroxide, reactions 7487-88-9, Magnesium sulfate, reactions 7733-02-0, Zinc sulfate 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate 10031-62-6, Tin sulfate 10043-01-3, Aluminum sulfate 10124-43-3, Cobalt sulfate 14489-25-9, Chromium sulfate 18130-44-4, Titanium sulfate RL: RCT (Reactant); RACT (Reactant or reagent) (method for preparing Mn-Co-Ni-containing lithium oxide composite used in rechargeable lithium ion battery)			
IT	500868-03-1P 911107-10-3P 911107-11-4P 911107-12-5P 911107-13-6P 911107-14-7P 911107-15-8P RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (method for preparing Mn-Co-Ni-containing lithium oxide composite used in rechargeable lithium ion battery)			
AB	The title lithium composite oxide has a formula of $Lia(NibCocMnd)M1-b-c-dO2$ ( $M = Cr, Zn$ and/or $Sn$ ; $a = 0.97-1.07$ ; $0 < b < 1$ ; $0 < c < 1$ ; $0 < d < 1$ ). The title method comprises: (1) mixing aqueous solution of the $M$ salt ( $M = Al, Mg, Cr, Zn, Ti$ and/or $Sn$ ) with aqueous solution of Mn, Ni and Co salts, adding into base solution, and copptg. for 4-11 h at 40-80°C to obtain a Ni-Co-Mn-M hydroxide composite, (2) separating, washing, drying for 8-40 h at 50-140°C to obtain a precursor, mix-grinding with $LiOH$ , and heat-treating for 4-10 h at 240-550°C to remove adsorbed water and structural water, and (3) heat-treating for 12-30 h at 650-850°C to obtain the final product. The product can be used as the pos. electrode material of rechargeable lithium ion battery.			

L3 ANSWER 43 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:481472 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 145:66249  
 TITLE: Preparation of lithium-ion battery positive electrode material with high specific capacity  
 INVENTOR(S): Lin, Yunqing; Chen, Zewei; Zeng, Fengcheng  
 PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China  
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 12 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Chinese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1773753	A	20060517	CN 2004-10088546	20041108
PRIORITY APPLN. INFO.:			CN 2004-10088546	20041108

- TI Preparation of lithium-ion battery positive electrode material with high specific capacity
- IT Secondary batteries  
     (lithium; preparation of lithium-ion battery pos. electrode material with high specific capacity)
- IT Battery cathodes
- Calcination
- Coating process
- Coprecipitation  
     (preparation of lithium-ion battery pos. electrode material with high specific capacity)
- IT Fluoropolymers, uses
- Polyoxyalkylenes, uses
- Styrene-butadiene rubber, uses
- RL: TEM (Technical or engineered material use); USES (Uses)  
     (preparation of lithium-ion battery pos. electrode material with high specific capacity)
- IT 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide  
 RL: CPS (Chemical process); NNU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
     (preparation of lithium-ion battery pos. electrode material with high specific capacity)
- IT 71-48-7, Cobalt acetate 373-02-4, Nickel acetate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 7786-81-4, Nickel sulfate 10043-01-3, Aluminum sulfate 10124-43-3, Cobalt sulfate 10141-05-6, Cobalt nitrate 13138-45-9, Nickel nitrate  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
     (preparation of lithium-ion battery pos. electrode material with high specific capacity)
- IT 1303-86-2, Boron trioxide, uses 1309-37-1, Ferric oxide, uses 1309-48-4, Magnesium oxide, uses 1314-23-4, Zirconium dioxide, uses 7631-86-9, Silicon dioxide, uses 7789-24-4, Lithium fluoride, uses 9002-84-0, Polytetrafluoroethylene 9002-89-5, Polyvinyl alcohol 9003-05-8, Polyacrylamide 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 10377-52-3, Lithium phosphate 12007-60-2, Lithium borate 12057-24-8, Lithium oxide, uses 12136-58-2, Lithium sulfide 12627-14-4, Lithium silicate 13463-67-7, Titanium dioxide, uses 18282-10-5, Tin dioxide 24937-79-9, Poly(vinylidene fluoride) 25322-68-3, Polyethylene oxide 50927-81-6, Silicon sulfide 193214-44-7, Aluminum cobalt lithium nickel oxide (Al0.15Coo0.1LiNi0.75O2) 891484-55-2  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (preparation of lithium-ion battery pos. electrode material with high specific capacity)
- IT 9003-55-8  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (styrene-butadiene rubber; preparation of lithium-ion battery pos. electrode material with high specific capacity)
- AB The title pos. electrode material comprises a matrix represented by  $\text{LiNi}_{1-x-y}\text{CoxMy}_2$  ( $0 < x < 0.4$ ;  $0 < y < 0.4$ ; M = Mg, Al, Ti, Mn, Y or Fe), and a coating material coated on the surface of the matrix particles. The coating material can be oxide such as  $\text{MgO}$ ,  $\text{B}_2\text{O}_3$ , etc., or fast-ion conductive glass such as  $\text{Li}_{20}\text{-B}_2\text{O}_3$ ,  $\text{Li}_{20}\text{-SiO}_2$ , etc. The title preparation method includes: (1) preparing precursor (mixed hydroxide) by co-precipitating salt solution containing nickel salt, cobalt salt and at least one third metal salt with alkaline solution, (2) mixing with lithium-containing compound, and calcining at 600–900 $^{\circ}\text{C}$  to obtain granular pos. electrode matrix, and (3) coating the matrix particles. The pos. electrode material has high specific

capacity and good pulping and coating performance.

L3 ANSWER 44 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:481469 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 145:66248  
TITLE: Manufacture of lithium-ion secondary battery  
with positive electrode made of nickel-based active  
material  
INVENTOR(S): Lin, Yunqing; Chen, Zewei; Zeng, Pengcheng  
PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China  
SOURCE: Faming Zhanli Shenqing Gongkai Shuomingshu, 13 pp.  
CODEN: CNXKEV  
DOCUMENT TYPE: Patent  
LANGUAGE: Chinese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1773763	A	20060517	CN 2004-10088545	20041108
PRIORITY APPLN. INFO.:			CN 2004-10088545	20041108
TI Manufacture of lithium-ion secondary battery with positive electrode made of nickel-based active material				
IT Secondary batteries (lithium; manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)				
IT Battery cathodes Calcination Coating process Coprecipitation (manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)				
IT Carbon black, uses RL: DEV (Device component use); USES (Uses) (manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)				
IT Fluoropolymers, uses Polyoxyalkylenes, uses Styrene-butadiene rubber, uses RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)				
IT 7440-44-0, Super P, uses RL: DEV (Device component use); USES (Uses) (activated; manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)				
IT 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)				
IT 373-02-4, Nickel acetate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 2180-18-9, Manganese acetate 5931-89-5, Cobalt acetate 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate 10124-43-3, Cobalt sulfate 10141-05-6, Cobalt nitrate 10377-66-9, Manganese nitrate 13138-45-9, Nickel nitrate RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process) (manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)				

- IT 7782-42-5, Graphite, uses  
 RL: DEV (Device component use); USES (Uses)  
 (manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)
- IT 1303-86-2, Boron trioxide, uses 1309-48-4, Magnesium oxide, uses 1313-13-9, Manganese dioxide, uses 1314-13-2, Zinc oxide, uses 1314-23-4, Zirconium dioxide, uses 1314-62-1, Vanadium pentoxide, uses 1344-28-1, Aluminum oxide, uses 7631-86-9, Silicon dioxide, uses 7784-30-7, Aluminum phosphate 7789-24-4, Lithium fluoride, uses 9002-84-0, Polytetrafluoroethylene 9002-89-5, Polyvinyl alcohol 9003-05-8, Polyacrylamide 9005-25-8, Starch, uses 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 10377-52-3, Lithium phosphate 12057-24-8, Lithium oxide, uses 12136-58-2, Lithium sulfide 12627-14-4, Lithium silicate 12676-27-6 13463-67-7, Titanium dioxide, uses 18282-10-5, Tin dioxide 24937-79-9, Poly(vinylidene fluoride) 25322-68-3, Polyethylene oxide 50927-81-6, Silicon sulfide 891484-60-9  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)
- IT 9003-55-8  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (styrene-butadiene rubber; manufacture of lithium-ion secondary battery with pos. electrode made of nickel-based active material)
- AB The title lithium-ion secondary battery comprises a pos. electrode made of modified LiNiO<sub>2</sub>, a neg. electrode made of a graphitized carbon material, and organic electrolyte. The pos. electrode comprises matrix particles coated with oxide such as MgO, ZnO, etc., or fast-ion conductive glass such as Li<sub>20</sub>•B<sub>203</sub>, Li<sub>20</sub>•Al<sub>203</sub>•B<sub>203</sub>, etc., and the matrix is Li<sub>Nil-x-y-zCoxAl<sub>y</sub>Mn<sub>z</sub>O<sub>2</sub></sub> (0<x<0.4; 0 < y < 0.3; 0 < z<0.5). The title manufacture method includes: (1) preparing precursor (mixed hydroxide) by using a salt solution containing Ni salt, Co salt and Mn salt, (2) mixing with lithium-containing compound, and calcining at 600-900 °C to obtain granular pos. electrode material, (3) coating the matrix particles, and (4) preparing liquid lithium-ion secondary battery.
- L3 ANSWER 45 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:458651 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 145:148961  
 TITLE: Comparison of structure and electrochemistry of Al- and Fe-doped LiNi<sub>1/3</sub>Co<sub>1/3</sub>Mn<sub>1/3</sub>O<sub>2</sub>  
 AUTHOR(S): Liu, Daotan; Wang, Zhaoxiang; Chen, Liqian  
 CORPORATE SOURCE: Laboratory for Solid State Ionics, Institute of Physics, Chinese Academy of Sciences, Beijing, 100080, Peop. Rep. China  
 SOURCE: Electrochimica Acta (2006), 51(20), 4199-4203  
 CODEN: ELCAAV; ISSN: 0013-4686  
 PUBLISHER: Elsevier B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English
- TI Comparison of structure and electrochemistry of Al- and Fe-doped LiNi<sub>1/3</sub>Co<sub>1/3</sub>Mn<sub>1/3</sub>O<sub>2</sub>  
 IT Battery cathodes  
 (comparison of structure and electrochem. of Al- and Fe-doped LiNi<sub>1/3</sub>Co<sub>1/3</sub>Mn<sub>1/3</sub>O<sub>2</sub> cathode material for lithium batteries)  
 IT Secondary batteries  
 (lithium; comparison of structure and electrochem. of Al- and Fe-doped

IT LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3O<sub>2</sub> cathode material for lithium batteries)  
346417-97-8, Cobalt lithium manganese nickel oxide  
(Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 769973-33-3 898820-27-4 898820-28-5  
898820-29-6 898820-30-9 898820-31-0  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(comparison of structure and electrochem. of Al- and Fe-doped  
LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3O<sub>2</sub> cathode material for lithium batteries)

AB LiNi<sub>1</sub>/3Co<sub>1</sub>/3-xMxMn<sub>1</sub>/3O<sub>2</sub> (M = Fe and Al; x = 0, 1/20, 1/9 and 1/6) were synthesized by firing the co-ppts. of the metal hydroxides. The impact of Fe and Al doping on the structure and electrochem. performance of LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3O<sub>2</sub> was compared by powder XRD, SEM, and galvanostatic charge/discharge tests as cathode materials for Li-ion batteries. These materials retain the layered structure of the LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3O<sub>2</sub> host. Fe- and Al-doped LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3O<sub>2</sub> show different characteristics in lattice parameters and cycling voltage plateaus with increasing dopant. More interestingly, low Al doping ( $x < 1/20$ ) improves structural stability but Fe doping does not have such effect even at low Fe content.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 46 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:457392 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 1451274794  
TITLE: Method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery  
INVENTOR(S): Lin, Yunqing; Fang, Songsheng; Wang, Shoufeng; Chen, Zewei; Zeng, Pengcheng  
PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China  
SOURCE: Faming Zhanli Shenqing Gongkai Shuomingshu, 18 pp.  
CODEN: CNXXEV  
DOCUMENT TYPE: Patent  
LANGUAGE: Chinese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1770511	A	20060510	CN 2004-10081224	20041103
PRIORITY APFLN. INFO.: CN 2004-10081224 20041103				
TI	Method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery			
IT	Secondary batteries (lithium; method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery)			
IT	Anodes Coating process Heat treatment (method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery)			
IT	Fluoropolymers, uses Polyoxyalkylenes, uses Styrene-butadiene rubber, uses RL: TEM (Technical or engineered material use); USES (Uses) (method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery)			
IT	1310-65-2, Lithium hydroxide RL: CPS (Chemical process); PEP (Physical, engineering or chemical			

process); PROC (Process)  
(method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery)

IT 557-34-6, Zinc acetate 1066-30-4, Chromium acetate 1834-30-6, Ferric acetate 7733-02-0, Zinc sulfate 7779-88-6, Zinc nitrate 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate 10028-22-5, Ferric sulfate 10101-53-8, Chromium sulfate 10103-47-6, Chromium nitrate 10124-43-3, Cobalt sulfate 10141-05-6, Cobalt nitrate 10421-48-4, Ferric nitrate 13057-42-6, Titanium acetate 13138-45-9, Nickel nitrate 13693-11-3, Titanium sulfate 13860-02-1, Titanium nitrate

RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)

(method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery)

IT 113066-89-0P, Cobalt lithium nickel oxide ( $\text{Co}_0.2\text{LiNiO}_0.8\text{O}_2$ ) 244304-47-0P, Cobalt lithium nickel zinc oxide ( $\text{Co}_0.3\text{LiNiO}_0.6\text{ZnO}_1.0\text{O}_2$ ) 328405-93-2P, Cobalt lithium nickel titanium oxide ( $\text{Co}_0.2\text{LiNiO}_0.7\text{TiO}_1.0\text{O}_2$ ) 639066-91-4P, Chromium cobalt lithium nickel oxide ( $\text{Cr}_0.1\text{Co}_0.2\text{LiNiO}_0.7\text{O}_2$ ) 906528-10-7P, Cobalt iron lithium nickel oxide ( $\text{Co}_0.3\text{Fe}_0.2\text{LiNiO}_0.5\text{O}_2$ ) 906528-14-1P, Cobalt lithium nickel titanium oxide ( $\text{Co}_0.2\text{LiNiO}_0.6\text{TiO}_1.0\text{O}_2$ ) 906528-16-3P, Cobalt iron lithium nickel oxide ( $\text{Co}_0.3\text{Fe}_0.3\text{LiNiO}_0.4\text{O}_2$ ) 906528-21-0P, Chromium cobalt lithium nickel oxide ( $\text{Cr}_0.2\text{Co}_0.2\text{LiNiO}_0.6\text{O}_2$ ) 906528-24-3P, Cobalt lithium nickel zinc oxide ( $\text{Co}_0.3\text{LiNiO}_0.5\text{ZnO}_0.2\text{O}_2$ )

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery)

IT 1303-86-2, Boron oxide, uses 1309-48-4, Magnesium oxide, uses 1314-62-1, Vanadium pentoxide, uses 1344-28-1, Aluminum oxide, uses 7631-86-9, Silicon dioxide, uses 9002-84-0, Polytetrafluoroethylene 9002-89-5, Polyvinyl alcohol 9003-05-8, Polyacrylamide 12057-24-8, Lithium oxide, uses 13463-67-7, Titanium oxide, uses 25322-68-3, Poly(ethylene oxide)

RL: TEM (Technical or engineered material use); USES (Uses)

(method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery)

IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)

(styrene-butadiene rubber; method for preparation of nickel cobalt-containing multi-metal oxide as anode material of lithium ion battery)

AB The title method comprises: copptg. mixed solution containing Co salt and Ni salt with alkaline solution in nitrogen or inert gas to form Ni-Co composite hydroxide, drying, and grinding to obtain a precursor, adding lithium hydroxide, grinding, and heat-treating at 240-400°C to remove adsorption water and constitution water, heat-treating at 650-850°C, coating the surface with metal oxides by using high polymer as auxiliary solvent, and heat-treating at 300-750°C to remove solvent to obtain the final product. This multi-metal oxide has the advantages of high specific capacity and high circulation properties.

L3 ANSWER 47 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:446319 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 144:436176  
TITLE: Lithium metal oxide cathodes for lithium

INVENTOR(S): batteries  
 Thackeray, Michael M.; Johnson, Christopher S.; Amine,  
 Khalil  
 PATENT ASSIGNEE(S): The University of Chicago, USA  
 SOURCE: U.S. Pat. Appl. Publ., 26 pp., Cont.-in-part of U.S.  
 Ser. No. 688,004.  
 CODEN: USXKCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060099508	A1	20060511	US 2005-271462	20051110
US 20020136954	A1	20020926	US 2001-887842	20010621
US 6677082	B2	20040113		
US 20020114995	A1	20020822	US 2001-989844	20011121
US 6680143	B2	20040120		
US 20040081888	A1	20040429	US 2003-688004	20031017
US 7135252	B2	20061114		
PRIORITY APPLN. INFO.:			US 2000-213618P	P 20000622
			US 2001-887842	A2 20010621
			US 2001-989844	A3 20011121
			US 2003-688004	A2 20031017

TI Lithium metal oxide cathodes for lithium batteries  
 IT Battery cathodes  
     (lithium metal oxide cathodes for lithium batteries)  
 IT Secondary batteries  
     (lithium; lithium metal oxide cathodes for lithium batteries)  
 IT 346417-97-8P, Cobalt lithium manganese nickel oxide  
     (Co0.33LiMn0.33Ni0.33O2) 448896-96-6P, Cobalt lithium manganese nickel  
     oxide (Co0.15Li1.09Mn0.18Ni0.58O2) 448896-98-8P 448896-99-9P,  
     Lithium manganese titanium oxide (Li1.07Mn0.79Ti0.14O2) 448897-00-5P,  
     Lithium manganese nickel oxide (Li1.2Mn0.4Ni0.4O2) 448897-01-6P, Lithium  
     manganese nickel oxide (Li1.27Mn0.6Ni0.13O2) 448897-02-7P, Lithium  
     manganese nickel titanium oxide (Li1.02Mn0.46Ni0.46Ti0.05O2)  
     885110-82-7P, Cobalt lithium manganese nickel oxide (Co0.2Li1.2MnNi0.8O5)  
     885110-83-8P, Lithium manganese titanium oxide (Li1.15MnTiO5)  
     885110-84-9P, Cobalt lithium manganese nickel oxide  
     (Co0.33Li1.3Mn1.33Ni0.33O5) 885110-85-0P, Cobalt lithium manganese  
     nickel oxide (Co0.33Li1.5Mn1.33Ni0.33O5) 885110-86-1P, Cobalt lithium  
     manganese nickel oxide (Co0.33Li1.7Mn1.33Ni0.33O5)  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
     (Preparation); USES (Uses)  
     (lithium metal oxide cathodes for lithium batteries)  
 AB A lithium metal oxide pos. electrode for a non-aqueous lithium cell is  
     disclosed. The cell is prepared in its initial discharged state and has a  
     general formula  $x\text{LiMO}_2 \cdot (1-x)\text{Li}_2\text{M}'\text{O}_3$  in which  $0 < x < 1$ , and where M is one or  
     more ion with an average trivalent oxidation state and with at least one ion  
     being Mn or Ni, and where M' is one or more ion with an average tetravalent  
     oxidation state. Complete cells or batteries are disclosed with  
     anode, cathode and electrolyte as are batteries of several cells  
     connected in parallel or series or both.

L3 ANSWER 48 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:402355 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 144:415971  
 TITLE: Method of preparation of conductive agent-cathode  
       active material composite for lithium secondary  
       battery

INVENTOR(S): Cheon, Sang-Eun; Yoo, Seok-Yoon; Yoon, Hye-Won; Kim, Jae-Kyung  
 PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea  
 SOURCE: Eur. Pat. Appl., 27 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1653534	A1	20060503	EP 2005-110064	20051027
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
KR 2006037618	A	20060503	KR 2004-86630	20041028
US 20060093920	A1	20060504	US 2005-258731	20051025
CN 1770516	A	20060510	CN 2005-10116672	20051026
JP 2006128119	A	20060518	JP 2005-314501	20051028
PRIORITY APPLN. INFO.:			KR 2004-86630	A 20041028
TI Method of preparation of conductive agent-cathode active material composite for lithium secondary battery				
IT Secondary batteries (lithium; method of preparation of conductive agent-cathode active material composite for lithium secondary battery)				
IT Battery cathodes Electric conductors (method of preparation of conductive agent-cathode active material composite for lithium secondary battery)				
IT Carbon black, uses RL: MOA (Modifier or additive use); USES (Uses) (method of preparation of conductive agent-cathode active material composite for lithium secondary battery)				
IT 1314-62-1, Vanadium oxide (V2O5), uses 1317-33-5, Molybdenum sulfide (MoS2), uses 12017-96-8, Chromium lithium oxide (CrLiO2) 12022-46-7, Iron lithium oxide (FeLiO2) 12031-65-1, Lithium nickel oxide (LiNiO2) 12039-13-3, Titanium sulfide (TiS2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12162-79-7, Lithium manganese oxide limno2 12162-87-7, Lithium vanadium oxide livo2 12162-92-4, Lithium vanadium oxide (LiV2O5) 12169-03-8, Lithium yttrium oxide (LiYO2) 12190-79-3, Cobalt lithium oxide (ColiO2) 12201-18-2, Lithium molybdenum sulfide (LiMoS2) 12209-15-3, Lithium scandium oxide lisco2 13568-36-0, Lithium nickel vanadium oxide (LiNiVO4) 55326-82-4, Lithium titanium sulfide litis2 218446-64-1, Aluminum cobalt lithium nickel oxide (Al0.04Co0.15LiNi0.81O2) 329205-35-6, Iron lithium phosphate (Fe2Li1.3(PO4)3) 884323-27-7, Iron lithium phosphate (Fe2Li1.3(PO4)3) 884323-28-8, Lithium vanadium phosphate (Cr2Li10-3(PO4)3) 884323-29-9, Chromium lithium phosphate (Cr2Li10-3(PO4)3) 884323-30-2, Lithium manganese phosphate (Li10-3Mn2(PO4)3) 884323-31-3, Cobalt lithium phosphate (Co2Li10-3(PO4)3) 884323-32-4, Copper lithium phosphate (Cu2Li10-3(PO4)3) 884323-33-5, Aluminum cobalt lithium nickel oxide (Al0-0.1Co0-0.5Li10.9-1.Ni10-0.902) 884323-35-7, Chromium cobalt lithium nickel oxide (Cr0-0.1Co0-0.5Li10.9-1.Ni10-0.902) 884323-37-9, Cobalt lithium manganese nickel oxide (Co0-0.5Fe0-0.1Li10.9-1.Ni10-0.902) 884323-39-1, Cobalt iron lithium nickel oxide (Co0-0.5Fe0-0.1Li10.9-1.Ni10-0.902) 884323-41-5, Cobalt lithium magnesium nickel oxide (Co0-0.5Li10.9-1.1Mg0-0.1Ni10-0.902) 884323-45-9, Cobalt lanthanum lithium nickel oxide (Co0-0.5La0-0.1Li10.9-1.Ni10-0.902) 884323-47-1, Cerium cobalt lithium nickel oxide (Ce0-0.1Co0-0.5Li10.9-1.Ni10-0.902) 884323-48-2, Cobalt lithium nickel strontium oxide (Co0-0.5Li10.9-1.Ni10-0.9Sr0-0.102) 884323-49-3, Cobalt				

lithium nickel vanadium oxide (Co0-0.5Li0.9-1.1Ni0-0.9V0-0.102)  
 884323-50-6, Lithium manganese nickel vanadium oxide (Li0.9-1.1Mn0-0.5Ni0-0.9V0-0.102) 884323-51-7, Lithium manganese nickel strontium oxide (Li0.9-1.1Mn0-0.5Ni0-0.9Sr0-0.102) 884323-52-8, Cerium lithium manganese nickel oxide (Ce0-0.1Li0.9-1.1Mn0-0.5Ni0-0.902) 884323-53-9, Lanthanum lithium manganese nickel oxide (La0-0.1Li0.9-1.1Mn0-0.5Ni0-0.902)  
 884323-54-0, Lithium magnesium manganese nickel oxide (Li0.9-1.1Mg0-0.1Mn0-0.5Ni0-0.902) 884323-55-1, Iron lithium manganese nickel oxide (Fe0-0.1Li0.9-1.1Mn0-0.5Ni0-0.902) 884323-56-2, Lithium manganese nickel oxide (Li0.9-1.1Mn0-0.6Ni0-0.902) 884323-58-4, Chromium lithium manganese nickel oxide (Cr0-0.1Li0.9-1.1Mn0-0.5Ni0-0.902) 884323-59-5, Aluminum lithium manganese nickel oxide (Al0-0.1Li0.9-1.1Mn0-0.5Ni0-0.902)  
 884323-62-0 884323-64-2 884323-66-4, Cobalt lithium manganese nickel oxide (Co0-0.5Li0.9-1.1Mn0-0.6Ni0-0.902) 884323-69-7  
 884323-71-1 884323-73-3 884323-75-5  
 884323-76-6 884323-77-7, Aluminum lithium nickel oxide (Al0-0.1Li0.9-1.1Ni02) 884323-78-8, Chromium lithium nickel oxide (Cr0-0.1Li0.9-1.1Ni02) 884323-79-9, Lithium manganese nickel oxide (Li0.9-1.1Mn0-0.1Ni02) 884323-80-2, Iron lithium nickel oxide (Fe0-0.1Li0.9-1.1Ni02) 884323-81-3, Lithium magnesium nickel oxide (Li0.9-1.1Mg0-0.1Ni02) 884323-82-4, Lanthanum lithium nickel oxide (La0-0.1Li0.9-1.1Ni02) 884323-83-5, Cerium lithium nickel oxide (Ce0-0.1Li0.9-1.1Ni02) 884323-84-6, Lithium nickel strontium oxide (Li0.9-1.1NiSr0-0.102) 884323-85-7, Lithium nickel vanadium oxide (Li0.9-1.1NiV0-0.102) 884323-86-8, Aluminum cobalt lithium oxide (Al0-0.1CoLi0.9-1.1O2) 884323-87-9, Chromium cobalt lithium oxide (Cr0-0.1CoLi0.9-1.1O2) 884323-88-0, Cobalt lithium manganese oxide (CoLi0.9-1.1Mn0-0.102) 884323-89-1, Cobalt iron lithium oxide (CoFe0-0.1Li0.9-1.1O2) 884323-90-4, Cobalt lithium magnesium oxide (CoLi0.9-1.1Mg0-0.102) 884323-91-5, Cobalt lanthanum lithium oxide (CoLa0-0.1Li0.9-1.1O2) 884323-92-6, Cerium cobalt lithium oxide (Ce0-0.1CoLi0.9-1.1O2) 884323-93-7, Cobalt lithium strontium oxide (CoLi0.9-1.1Sr0-0.102) 884323-94-8, Cobalt lithium vanadium oxide (CoLi0.9-1.1V0-0.102) 884323-95-9, Aluminum lithium manganese oxide (Al0-0.1Li0.9-1.1Mn02) 884323-96-0, Chromium lithium manganese oxide (Cr0-0.1Li0.9-1.1Mn02) 884323-97-1, Lithium manganese oxide (Li0.9-1.1Mn1-1.1O2) 884324-00-9, Iron lithium manganese oxide (Fe0-0.1Li0.9-1.1Mn02) 884324-02-1, Lithium magnesium manganese oxide (Li0.9-1.1Mg0-0.1Mn02) 884324-05-4, Lanthanum lithium manganese oxide (La0-0.1Li0.9-1.1Mn02) 884324-08-7, Cerium lithium manganese oxide (Ce0-0.1Li0.9-1.1Mn02) 884324-11-2, Lithium manganese strontium oxide (Li0.9-1.1MnSr0-0.102) 884324-16-7, Lithium manganese vanadium oxide (Li0.9-1.1MnV0-0.102) 884324-19-0, Aluminum lithium manganese oxide (Al0-0.1Li0.9-1.1Mn2O4) 884324-21-4, Chromium lithium manganese oxide (Cr0-0.1Li0.9-1.1Mn2O4) 884324-23-6, Iron lithium manganese oxide (Fe0-0.1Li0.9-1.1Mn2O4) 884324-26-9, Lithium magnesium manganese oxide (Li0.9-1.1Mg0-0.1Mn2O4) 884324-28-1, Lanthanum lithium manganese oxide (La0-0.1Li0.9-1.1Mn2O4) 884324-30-5, Cerium lithium manganese oxide (Ce0-0.1Li0.9-1.1Mn2O4) 884324-31-6, Lithium manganese strontium oxide (Li0.9-1.1Mn2Sr0-0.104) 884324-32-7, Lithium manganese vanadium oxide (Li0.9-1.1Mn2V0-0.104)

RL: DEV (Device component use); USES (Uses)

(method of preparation of conductive agent-cathode active material composite for lithium secondary battery)

AB The invention relates to a conductive agent/pos. active material composite for a lithium secondary battery. The composite includes a pos. active material capable of reversibly intercalating/deintercalating lithium ions, and a conductive agent on the surface of the pos. active material. The conductive agent comprises a first conductive agent having a sp. surface area ranging from about 200 to about 1500 m<sup>2</sup>/g and a second conductive agent having a sp. surface area of about 100 m<sup>2</sup>/g or less.

REFERENCE COUNT:

16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 49 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:367258 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 144:373158  
 TITLE: Nonaqueous electrolyte secondary battery  
 INVENTOR(S): Deguchi, Masaki; Matsui, Tooru; Yoshizawa, Hiroshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 8 pp., Cont.-in-part of Appl.  
 No. PCT/JP05/004655.  
 CODEN: USXXC0  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060083988	A1	20060420	US 2005-287446	20051128
WO 2005099022	A1	20051020	WO 2005-JP4655	20050316

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,  
 CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,  
 GE, GH, GM, HR, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
 LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,  
 NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM,  
 SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
 EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,  
 RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,  
 MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.:	JP 2004-113208	A 20040407
	WO 2005-JP4655	A2 20050316

TI Nonaqueous electrolyte secondary battery  
 IT Battery cathodes  
     Battery electrolytes  
     Secondary batteries  
       (nonaq. electrolyte secondary battery)  
 IT 882214-40-6, Cobalt lithium nickel oxide (Co0.15LiNi0.84O2)  
 RL: DEV (Device component use); USES (Uses)  
     (Al-doped; nonaq. electrolyte secondary battery)  
 IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate  
 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide (CoLiO2)  
 21324-30-3, Lithium hexafluorophosphate 101920-93-8, Cobalt lithium  
 nickel oxide (Co0.5LiNi10.5O2) 113066-90-3, Cobalt lithium nickel oxide  
 (Co0.6LiNi10.4O2) 116327-68-5, Cobalt lithium nickel oxide  
 (Co0.3LiNi10.7O2) 116327-69-6, Cobalt lithium nickel oxide  
 (Co0.1LiNi10.9O2) 118557-81-6, Cobalt lithium nickel oxide  
 (Co0.7LiNi10.3O2) 128975-24-6, Lithium manganese nickel oxide  
 LiMn0.5Ni10.5O2 143623-49-8, Cobalt lithium nickel oxide  
 (Co0.25LiNi10.75O2) 179186-41-5, Lithium manganese nickel oxide  
 (LiMn0.7Ni10.3O2) 193214-24-3, Aluminum cobalt lithium nickel oxide  
 (Al0.05Co0.15LiNi10.8O2) 193215-92-8, Cobalt lithium manganese nickel  
 oxide (Co0.1LiMn0.4Ni10.5O2) 195880-90-1, Cobalt lithium magnesium nickel  
 oxide (Co0.15LiMg0.05Ni10.8O2) 203005-76-9, Cobalt lithium nickel borate  
 oxide (Co0.15LiNi10.8(BO3)0.05O1.85) 209908-08-7, Aluminum cobalt lithium  
 nickel oxide (Al10.03Co0.15LiNi10.82O2) 216385-46-5, Cobalt lithium nickel  
 tin oxide (Co0.15LiNi10.85n0.05O2) 216385-49-8, Cobalt lithium nickel  
 oxide silicate (Co0.15LiNi10.801.8(SiO4)0.05) 216385-50-1, Cobalt iron  
 lithium nickel oxide (Co0.15Fe0.05LiNi10.8O2) 216385-51-2, Cobalt lithium

nickel titanium oxide (Co0.15LiNi10.8Ti0.0502) 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)  
 846020-48-2 849416-68-8, Cobalt lithium nickel niobium oxide (Co0.15LiNi0.8Nb0.0502) 859529-03-6, Cobalt gallium lithium nickel oxide (Co0.15Ga0.05LiNi0.802) 867248-92-8, Cobalt lithium nickel strontium oxide (Co0.15LiNi0.8Sr0.0502) 867248-93-9, Cobalt lithium nickel zinc oxide (Co0.15LiNi0.8Zn0.0502) 867248-94-0, Calcium cobalt lithium nickel oxide (Ca0.05Co0.15LiNi0.802) 867248-95-1, Chromium cobalt lithium nickel oxide (Cr0.05Co0.15LiNi0.802) 867248-96-2, Cobalt lithium nickel oxide phosphate (Co0.15LiNi0.8O1.8(Po4)0.05) 867248-97-3, Cobalt lithium nickel vanadium oxide (Co0.15LiNi0.8V0.0502) 867248-98-4, Antimony cobalt lithium nickel tantalum oxide (Sb0.05Co0.15LiNi0.802) 867248-99-5, Cobalt lithium nickel tantalum oxide (Co0.15LiNi0.8Ta0.0502) 867249-00-1, Cobalt lithium molybdenum nickel oxide (Co0.15LiMo0.05Ni0.802) 867249-01-2, Cobalt lithium nickel zirconium oxide (Co0.15LiNi0.8Zr0.0502) 867249-02-3, Cobalt lithium nickel yttrium oxide (Co0.15LiNi0.8Y0.0502) 867249-03-4 867249-04-5 867249-05-6 867249-06-7  
 882214-39-3, Aluminum cobalt lithium nickel oxide (Al0.01Co0.15LiNi0.84O2) 882214-41-7, Cobalt lithium nickel tungsten oxide (Co0.15LiNi0.8W0.05O2) 882214-42-8 882214-43-9 882214-44-0  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte secondary battery)  
 IT 872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte secondary battery)  
 AB A non-aqueous electrolyte secondary battery includes: a pos. electrode capable of absorbing and desorbing lithium; a neg. electrode capable of absorbing and desorbing lithium; a separator interposed between the pos. electrode and the neg. electrode; and a non-aqueous electrolyte. The pos. electrode includes a composite oxide represented by:  $LiNixM1-x-yLyO2$  as an active material. The formula satisfies  $0.3 \leq x \leq 0.9$  and  $0 \leq y \leq 1$ . The element M is at least one selected from the group consisting of Co and Mn, and the element L is at least one selected from the group consisting of Mg, Al, Ti, Sr, Zn, B, Ca, Cr, Si, Ga, Sn, P, V, Sb, Nb, Ta, Mo, W, Zr, Y and Fe. The non-aqueous electrolyte includes a main solvent, a solute and vinyl ethylene carbonate.

L3 ANSWER 50 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:222499 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 145:86475  
 TITLE: Manufacture of cathode active mass containing Li-Mn composite oxide  
 INVENTOR(S): Han, Enshan; Zhu, Lingzhi; Li, Peng; Zhang, Huiqing;  
 Ruan, Yanli; Chang, Liang; Zhang, Xihui  
 PATENT ASSIGNEE(S): Hebei University of Technology, Peop. Rep. China  
 SOURCE: Faming Zhanli Shenqing Gongkai Shuomingshu, 12 pp.  
 CODEN: CNXKEV  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Chinese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1741302	A	20060301	CN 2005-10015096	20050915
PRIORITY APPLN. INFO.:			CN 2005-10015096	20050915
TI Manufacture of cathode active mass containing Li-Mn composite oxide				
IT Battery cathodes (manufacture of cathode active mass containing Li-Mn composite oxides for secondary lithium batteries)				
IT 346417-97-8P, Cobalt lithium manganese nickel oxide				

(Co0.33LiMn0.33Ni0.33O2) 892669-25-9P 892669-29-3P  
 RL: DEV (Device component use); IMP (Industrial manufacture); PREP (Preparation); USES (Uses)  
 (manufacture of cathode active mass containing Li-Mn composite oxides for secondary lithium batteries)

IT 373-02-4, Nickel acetate 1310-65-2, Lithium hydroxide 2180-18-9,  
 Manganese acetate 5931-89-5, Cobalt acetate 10141-05-6, Cobalt nitrate 10377-66-9, Manganese nitrate 13138-45-9, Nickel nitrate  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (manufacture of cathode active mass containing Li-Mn composite oxides for secondary lithium batteries)

AB The active mass is manufactured by adding 0.1-1 M mixed solution of a soluble Ni salt, a Co salt, and a salt to 2 mol/l LiOH aqueous solution at a flow rate 0.3 mL/min, reacting the mixture at a pH of 8-13, filtering the obtained precipitate, repeatedly washing with deionized water until neutral, and vacuum drying to obtain a M(OH)2 (M = Ni, Co and Mn), ball milling the M(OH)2 with a Li salt at a mol. ratio of 1:(1-1.1) to obtain a Li-M mixed powder, tabletting the powder under a pressure of 50 MPa, firing at 480° for 3 h, cooling to room temperature, ball milling into a powder, tabletting under a pressure of 50 MPa, and firing at 500-900° for 4-9 h.

L3 ANSWER 51 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:168419 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 144:257175  
 TITLE: Nickel lithium mixed oxide cathode active materials for nonaqueous secondary batteries and method for their manufacture  
 INVENTOR(S): Matsumoto, Akira  
 PATENT ASSIGNEE(S): Sumitomo Metal Mining Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006054159	A	20060223	JP 2004-315683	20041029
PRIORITY APPLN. INFO.:			JP 2004-209206	A 20040715
TI	Nickel lithium mixed oxide cathode active materials for nonaqueous secondary batteries and method for their manufacture			
IT	Carboxylic acids, reactions Fatty acids, reactions RL: RCT (Reactant); RACT (Reactant or reagent) (lithium salts; manufacture of Li Ni mixed oxide cathode active materials containing Al and Li for nonaq. secondary batteries)			
IT	Battery cathodes (manufacture of Li Ni mixed oxide cathode active materials containing Al and Li for nonaq. secondary batteries)			
IT	Secondary batteries (nonaq. electrolyte; manufacture of Li Ni mixed oxide cathode active materials containing Al and Li for nonaq. secondary batteries)			
IT	12054-48-7P, Nickel hydroxide 61179-08-6P, Cobalt nickel hydroxide 212853-11-7P, Aluminum cobalt nickel hydroxide RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process) (manufacture of Li Ni mixed oxide cathode active materials containing Al and Li			

for nonaq. secondary batteries)

IT 876655-87-7P 876655-88-8P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.15Li1.05Ni0.8202.08) 876655-89-9P 876655-90-2P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.15Li1.05Ni0.8202.1) 876655-91-3P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.16Li1.05Ni0.8102.06) 876655-92-4P 876655-93-5P 876655-94-6P, Aluminum cobalt lithium nickel oxide (Al0.03Co0.15Li1.05Ni0.8202.12) 876655-95-7P 876655-96-8P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (manufacture of Li Ni mixed oxide cathode active materials containing Al and Li for nonaq. secondary batteries)

IT 7429-90-5, Aluminum, uses 7440-48-4, Cobalt, uses

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (manufacture of Li Ni mixed oxide cathode active materials containing Al and Li for nonaq. secondary batteries)

IT 554-13-2, Lithium carbonate 919-16-4, Lithium citrate 1310-65-2, Lithium hydroxide 1332-40-7, Copper oxychloride 1344-13-4, Tin chloride 1344-28-1, Aluminum oxide, reactions 1344-67-8, Copper chloride 7646-79-9, Cobalt chloride (CoCl<sub>2</sub>), reactions 7646-85-7, Zinc chloride, reactions 7699-43-6, Zirconium oxychloride 7718-54-9, Nickel chloride (NiCl<sub>2</sub>), reactions 7718-98-1, Vanadium chloride (VC13) 7721-01-9, Tantalum chloride 7727-18-6, Vanadium oxychloride 7773-01-5, Manganese chloride (MnCl<sub>2</sub>) 7778-54-3, Calcium oxychloride 7786-30-3, Magnesium chloride, reactions 7787-47-5, Beryllium chloride 7787-59-9, Bismuth oxychloride 7787-60-2, Bismuth chloride 7790-69-4, Lithium nitrate 10026-11-6, Zirconium chloride 10026-12-7, Niobium chloride 10038-98-9, Germanium chloride 10043-01-3, Aluminum sulfate 10043-52-4, Calcium chloride (CaCl<sub>2</sub>), reactions 10361-37-2, Barium chloride, reactions 10361-84-9, Scandium chloride 10377-48-7, Lithium sulfate 10476-85-4, Strontium chloride 11130-18-0, Titanium chloride 11138-49-1, Sodium aluminate 12040-57-2, Iron chloride 12057-24-8, Lithium oxide, reactions 12672-70-7, Indium chloride 12778-28-8, Zinc oxychloride 13450-90-3, Gallium chloride 13776-78-8, Indium chloride oxide (InOCl) 15588-51-9, Gallium oxychloride 21645-51-2, Aluminum hydroxide, reactions 24623-77-6, Aluminum hydroxide oxide 39335-98-3, Magnesium oxychloride 39345-92-1, Chromium chloride 39427-03-7, Barium chloride oxide 51198-20-0, Niobium chloride oxide 56509-17-2, Iron chloride oxide 56938-98-8, Chromium chloride oxide 57572-63-1, Tin oxychloride 63091-13-4, Manganese chloride oxide 85432-18-4, Germanium chloride oxide 124366-18-3, Nickel chloride oxide 191655-12-6, Cobalt chloride oxide 227754-32-7, Titanium chloride oxide 866627-06-7, Beryllium chloride oxide 876655-97-9, Lithium hydroxide oxide 876655-98-0, Tantalum chloride oxide 876655-99-1, Strontium chloride oxide 876656-00-7, Scandium chloride oxide

RL: RCT (Reactant); RACT (Reactant or reagent) (manufacture of Li Ni mixed oxide cathode active materials containing Al and Li for nonaq. secondary batteries)

AB Materials having composition formula LixNil-p-q-rCopAlqAr02-y (I; x = 0.8-1.3; 0 < p ≤ 0.2; 0 < q ≤ 0.1; r = 0-0.1; -0.3 < y < 0.1; A = Ti, V, In, Cr, Fe, Sn, Cu, Zn, Mn, Mg, Ga, Ni, Co, Zr, Bi, Ge, Nb, Ta, Be, Ca, Sr, Ba, and/or Sc) and consisting of single crystal primary particles of average size 2-8 μm are claimed. Method for manufacture of the materials includes mixing of Co-containing Ni compds. with 0.1-15 mol% (based on Cl against Co + Ni) inorg. (oxy)chlorides, roasting the mixture at 800-1300° to obtain single crystal oxides of particle size 2-8 μm, mixing the obtained oxides with Al compds. and Li compds. or

coating the obtained oxides with Al compds. and then mixing with Li compds., and firing the mixture at 600-800°. Also claimed are materials having composition formula I ( $A = V$ ;  $0 < r \leq 0.05$ ) and average size 2-12  $\mu\text{m}$  and method for their manufacture including preparation of Ni compds.

containing Co and Al or preparation of Ni compds. containing Co and its coating with Al compound, its mixing with 0.5-15 mol% (based on Cl against Ni + Co + Al) V chloride, roasting the mixture at 900-1300°, mixing the obtained oxide with Li compds., and further firing at 600-800°. The cathodes have low reactivity with the electrolytes and show low internal elec. resistivity when prepared into batteries.

- L3 ANSWER 52 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:155422 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 144:415805  
TITLE: Synthesis of spherical  $\text{Li}[\text{Ni}(1/3-z)\text{Co}(1/3-z)\text{Mn}(1/3-z)\text{Mgz}]O_2$  as positive electrode material for lithium-ion battery  
AUTHOR(S): Kim, Gil-Ho; Myung, Seung-Taek; Kim, Hyun-Soo; Sun, Yang-Kook  
CORPORATE SOURCE: Department of Chemical Engineering, College of Engineering, Hanyang University, Seoul, 133-791, S. Korea  
SOURCE: Electrochimica Acta (2006), 51(12), 2447-2453  
CODEN: ELCAAV; ISSN: 0013-4686  
PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
TI Synthesis of spherical  $\text{Li}[\text{Ni}(1/3-z)\text{Co}(1/3-z)\text{Mn}(1/3-z)\text{Mgz}]O_2$  as positive electrode material for lithium-ion battery  
IT Secondary batteries  
(lithium; synthesis of spherical  $\text{Li}[\text{Ni}(1/3-z)\text{Co}(1/3-z)\text{Mn}(1/3-z)\text{Mgz}]O_2$  cathode material for lithium-ion batteries)  
IT Particles  
(spherical; synthesis of spherical  $\text{Li}[\text{Ni}(1/3-z)\text{Co}(1/3-z)\text{Mn}(1/3-z)\text{Mgz}]O_2$  cathode material for lithium-ion batteries)  
IT Battery cathodes  
(synthesis of spherical  $\text{Li}[\text{Ni}(1/3-z)\text{Co}(1/3-z)\text{Mn}(1/3-z)\text{Mgz}]O_2$  cathode material for lithium-ion batteries)  
IT 189139-63-7, Cobalt manganese nickel hydroxide  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
(precursor; in synthesis of spherical  $\text{Li}[\text{Ni}(1/3-z)\text{Co}(1/3-z)\text{Mn}(1/3-z)\text{Mgz}]O_2$  cathode material for lithium-ion batteries)  
IT 346417-97-8P, Cobalt lithium manganese nickel oxide  
( $\text{Co}_0.33\text{LiMn}_0.33\text{Ni}_0.33\text{O}_2$ ) 837287-67-9P 884336-89-4P  
884336-90-7P  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(synthesis of spherical  $\text{Li}[\text{Ni}(1/3-z)\text{Co}(1/3-z)\text{Mn}(1/3-z)\text{Mgz}]O_2$  cathode material for lithium-ion batteries)  
AB  $\text{Li}[\text{Ni}(1/3-z)\text{Co}(1/3-z)\text{Mn}(1/3-z)\text{Mgz}]O_2$  ( $z = 0, 0.04$ ) cathode materials were synthesized by co-precipitation. These materials have an  $\alpha\text{-NaFeO}_2$  (R.hivin.3m) structure - confirmed by XRD. Cation mixing in the Li layer is decreased by Mg substitution according to Rietveld refinement of XRD data. Spherical morphologies were observed by SEM for the as-synthesized final products. Their electrochem. properties during charge and discharge are discussed. When Mg ions are substituted, the initial reversible capacity decreased. However, the substitution for Mn sites in  $\text{Li}[\text{Ni}_1/3\text{Co}_1/3\text{Mn}_1/3]\text{O}_2$  did not decrease the capacity because Mn site

substitution did not result in loss of electroactive elements in the compound DSC showed that the exothermic peaks of the charged electrodes Li[Ni(1/3-z)Co(1/3-z)Mn(1/3-z)Mgz]O2 (z = 0.04) are smaller than that of Li[Ni1/3Col1/3Mn1/3]O2, which means that the thermal stability was improved by Mg substitution, even for a highly de-lithiated state.

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 53 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:116858 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 144:174334  
TITLE: Manufacture of manganese based cathode active mass and its usage  
INVENTOR(S): Sun, Yucheng; Chen, Liquan; Huang, Xuejie  
PATENT ASSIGNEE(S): Institute of Physics, Chinese Academy of Sciences, Peop. Rep. China  
SOURCE: Faming Zuanli Shengqing Gongkai Shuomingshu, 18 pp.  
DOCUMENT TYPE: Patent  
LANGUAGE: Chinese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1595689	A	20050316	CN 2003-156807	20030908
PRIORITY APPLN. INFO.:			CN 2003-156807	20030908
TI	Manufacture of manganese based cathode active mass and its usage			
IT	Battery cathodes Sol-gel processing (method for manufacture of manganese pos. electrode material and its application)			
IT	128975-24-6P, Lithium manganese nickel oxide (LiMn0.5Ni0.502) 170110-41-5P, Cobalt lithium manganese nickel oxide (Co0.6LiMn0.2Ni0.202) 179802-95-0P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.1Ni0.802) 193216-02-3P 217309-43-8P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402) 848828-26-2P, Lithium magnesium manganese nickel oxide (LiMg0.05Mn0.5Ni0.4502) 874442-89-4P, Aluminum lithium manganese nickel oxide (Al0.05LiMn0.15Ni0.802) 874442-90-7P, Aluminum lithium manganese nickel oxide (Al0.15LiMn0.35Ni0.502) 874442-91-8P, Chromium lithium manganese nickel oxide (Cr0.05LiMn0.15Ni0.802) 874442-92-9P, Chromium lithium manganese nickel oxide (Cr0.3LiMn0.3Ni0.402) 874442-93-0P, Lithium manganese nickel oxide (Li1.05Mn0.15Ni0.802) 874442-94-1P, Lithium manganese nickel oxide (Li1.15Mn0.35Ni0.502) 874442-95-2P, Lithium magnesium manganese nickel oxide (LiMg0.2Mn0.5Ni0.302) 874442-96-3P, Lithium magnesium manganese nickel oxide (LiMg0.1Mn0.5Ni0.402) 874442-97-4P 874442-98-5P 874442-99-6P 874443-00-2P, Aluminum lithium manganese nickel oxide (Al0.05Li1.1Mn0.35Ni0.502) 874443-01-3P 874443-02-4P			
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)				
IT	(comps. and manufacture of layer structured substituted lithium manganese oxide cathode active mass for secondary lithium batteries)			
IT	554-13-2, Lithium carbonate 1307-96-6, Cobalt oxide (CoO), uses 1308-06-1, Cobalt oxide (Co3O4) 1309-48-4, Magnesia, uses 1313-13-9, Manganese dioxide, uses 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses 7784-30-7, Aluminum phosphate (AlPO4) 7789-24-4, Lithium fluoride, uses 10377-52-3, Trilithium phosphate 12057-17-9, Lithium manganese oxide (LiMn2O4) 12057-24-8, Lithium oxide, uses 12190-79-3, Cobalt lithium oxide (ColiO2) 13463-67-7, Titania, uses 37220-89-6, Lithium aluminate 99489-75-5, Chromium lithium oxide (Cr2LiO4)			

RL: MOA (Modifier or additive use); USES (Uses)  
 (compns. and manufacture of layer structured substituted lithium manganese oxide cathode active mass for secondary lithium batteries)  
 IT 68-04-2, Trisodium citrate 77-92-9, Citric acid, uses 87-69-4,  
 Tartaric acid, uses 302-01-2, Hydrazine, uses 1336-21-6, Ammonium hydroxide 6484-52-2, Ammonium nitrate, uses 7783-20-2, Ammonium sulfate, uses 12125-02-9, Ammonium chloride, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (compns. and manufacture of layer structured substituted lithium manganese oxide cathode active mass for secondary lithium batteries)  
 AB The cathode active mass, useful for secondary Li batteries, is a layer structured  $\text{LiMn}_{1-x}\text{Ni}_x\text{Mn}_2$ , where M is Li, Mg, Co, Al, and Cr or a 1:(1-5) mol ratio mixture of 2 of the elements,  $0.2 \leq x \leq 0.8$ , 0.5y  $\leq 0.6$ , and  $(x+y) \leq 1$ ; and is manufactured by mixing a (1.0-4)M solution of soluble Mn and M salts with a (2.0-8.0)M alkaline solution and a (0.1-2.0)M in a reaction vessel, stirring the mixture, filtering, washing the precipitate and drying to obtain a Mn containing precursor; modifying the precursor with a soluble modifying salt and a complexing agent by a sol-gel process or by precipitation; wet mixing the modified precursor with a Li salt at a precursor/Li salt mol. ratio 1:(1.0-1.1), and mist spraying to form 1-100  $\mu\text{m}$  solid particles, and firing at 600-1100° for 1-48 h.

L3 ANSWER 54 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:116823 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 1441:174327  
 TITLE: Manufacture of cathode material for secondary lithium battery  
 INVENTOR(S): Wu, Mengtao; Chen, Botao; Huang, Laihe; Xu, Ning; Zhang, Ning  
 PATENT ASSIGNEE(S): Peop. Rep. China  
 SOURCE: Faming Zhanli Shenqing Gongkai Shuomingshu, 7 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Chinese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1595680	A	20050316	CN 2004-10019741	20040625
PRIORITY APPLN. INFO.: CN 2004-10019741 20040625				
TI Manufacture of cathode material for secondary lithium battery				
IT Battery cathodes (manufacture of cathodes containing lithium manganese nickel composite oxides for secondary lithium batteries)				
IT 193215-96-2P, Cobalt lithium manganese nickel oxide ( $\text{Co}_0.2\text{LiMn}_0.4\text{Ni}_0.402$ ) 193216-02-3P 346417-97-8P, Cobalt lithium manganese nickel oxide ( $\text{Co}_0.33\text{LiMn}_0.33\text{Ni}_0.3302$ ) RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (manufacture of cathodes containing lithium manganese nickel composite oxides for secondary lithium batteries)				
IT 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide ( $\text{Li}(\text{OH})_2$ ) 602297-52-9, Cobalt manganese nickel hydroxide ( $\text{Co}_0.33\text{Mn}_0.33\text{Ni}_0.33(\text{OH})_2$ ) 602297-53-0, Cobalt manganese nickel hydroxide ( $\text{Co}_0.2\text{Mn}_0.4\text{Ni}_0.4(\text{OH})_2$ ) 874753-63-6 RL: RCT (Reactant); RACT (Reactant or reagent)				

(manufacture of cathodes containing lithium manganese nickel composite oxides  
for secondary lithium batteries)

AB The material, represented by  $\text{LiNi}_{0.5-x}\text{Mn}_{0.5-x}\text{M}_2\text{O}_2$  ( $\text{M} = \text{Co, Ti, and/or Al}$ , and  $0 < x < 0.5$ ), is manufactured by dry or wet mixing a hydroxide which is co-precipitated with Ni, Mn, Co, Ti, and/or Al, a carbonate compound, or an oxide with LiOH or Li<sub>2</sub>CO<sub>3</sub>; loosely depositing the mixture to have a thickness 2-60 mm; press-granulating under 4-50 MPa; firing at 700-1050° for 4-32 h by introducing air or O<sub>2</sub> 0.1-10 m<sup>3</sup>/h·kg; cooling; and grinding into a powder having particle size 0.5-25 µm.

L3 ANSWER 55 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2006:109710 CAPLUS <> LOGINID::20080630>>  
DOCUMENT NUMBER: 145:380190  
TITLE: Synthesis and characterization of a new inverse spinel  
LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub> for lithium-ion batteries  
AUTHOR(S): Fey, George Ting-Kuo; Muralidharan, P.; Lu,  
Cheng-Zhang  
CORPORATE SOURCE: Department of Chemical and Materials Engineering,  
National Central University, Chung-Li, 32054, Taiwan  
SOURCE: Materials Letters (2006), 60(9-10), 1209-1212  
CODEN: MLETDJ; ISSN: 0167-577X  
PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
TI Synthesis and characterization of a new inverse spinel  
LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub> for lithium-ion batteries  
IT Polyoxyalklenes, processes  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PROC (Process)  
(in synthesis of inverse spinel LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub> cathode material  
for lithium-ion batteries)  
IT Battery cathodes  
(synthesis and characterization of inverse spinel LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub>  
cathode material for lithium-ion batteries)  
IT 77-92-9, Citric acid, processes 25322-68-3, Polyethylene glycol  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PROC (Process)  
(in synthesis of inverse spinel LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub> cathode material  
for lithium-ion batteries)  
IT 910629-42-4P  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)  
(synthesis and characterization of inverse spinel LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub>  
cathode material for lithium-ion batteries)  
AB The cathode active material, LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub>, was synthesized by a citric acid:polyethylene glycol (CA:PEG) polymeric method, followed by calcination at 723 K for 5 h in air. XRD showed complete formation of a crystalline phase when heated at 723 K and SEM showed the various stages of morphol. for the polymeric intermediates of the LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub> compound TEM showed particle sizes from .apprx.170 to 190 nm. Cells with LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub> cathodes were cycled between 2.8 and 4.9 V (vs. Li) at a rate of 0.15 C. The galvanostatic cycling suggests that cycle stability and capacity retention were enhanced for LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub> prepared with a CA:PEG ratio of 3:1. The dQ/dV vs. voltage plots revealed redox potentials and slower impedance growth for the synthesized LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3V<sub>04</sub> cathode material.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 56 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:1305884 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 144:54376  
 TITLE: Cathode active mass for secondary nonaqueous lithium  
 battery, its manufacture, and the  
 battery using the active mass  
 INVENTOR(S): Kurita, Fumi; Nakajima, Motoe  
 PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005346956	A	20051215	JP 2004-162152	20040531
PRIORITY APPLN. INFO.:			JP 2004-162152	20040531
TI	Cathode active mass for secondary nonaqueous lithium battery, its manufacture, and the battery using the active mass			
IT	Battery cathodes (cathodes containing metal compds. modified on lithium transition metal composite oxides for secondary lithium batteries)			
IT	Secondary batteries (lithium; cathodes containing metal compds. modified on lithium transition metal composite oxides for secondary lithium batteries)			
IT	193215-50-8P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.3Ni0.602) 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.402) 871466-01-2P 871466-02-3P, Cobalt lithium manganese nickel oxide (Co0.3Li1.1Mn0.25Ni0.4502)			
IT	RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses) (cathodes containing metal compds. modified on lithium transition metal composite oxides for secondary lithium batteries)			
IT	557-04-0, Magnesium stearate 637-12-7, Aluminum stearate RL: MOA (Modifier or additive use); USES (Uses) (cathodes containing metal compds. modified on lithium transition metal composite oxides for secondary lithium batteries)			
AB	The active mass comprise a Li-transition metal composite oxide; where the surface of the composite oxide is modified by a metal compound. The active mass is manufactured by adding the metal compound to the composite oxide during cracking the composite oxide and heat treating. The battery has the above cathode active mass.			

L3 ANSWER 57 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:1284727 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 145:380173  
 TITLE: Synthesis and electrochemical properties of  
 Li[Mn<sub>1/3-x</sub>/3Ni<sub>1/3-x</sub>/3Co<sub>1/3-x</sub>/3Cr<sub>x</sub>]O<sub>2</sub> as cathode  
 materials for lithium-ion secondary batteries  
 AUTHOR(S): Lin, Xiao-jing; Li, Shu-hua; He, Ze-zhen; Liu,  
 Xing-quan  
 CORPORATE SOURCE: Research and Development Center for Functional  
 Materials, Chengdu Institute of Organic Chemistry,  
 Chinese Academy of Sciences, Chengdu, 610041, Peop.  
 China  
 SOURCE: Hecheng Huaxue (2005), 13(5), 441-445  
 CODEN: HEHUE2; ISSN: 1005-1511  
 PUBLISHER: Hecheng Huaxue Bianjibu  
 DOCUMENT TYPE: Journal

- LANGUAGE: Chinese
- TI Synthesis and electrochemical properties of  $\text{Li}[\text{Mn1/3-x/3Ni1/3-x/3Co1/3-x/3Crx}]O2$  as cathode materials for lithium-ion secondary batteries
- IT Secondary batteries  
 (lithium; cathodes; synthesis and electrochem. properties of  $\text{Li}[\text{Mn1/3-x/3Ni1/3-x/3Co1/3-x/3Crx}]O2$  as cathode materials for lithium-ion secondary batteries)
- IT 7439-93-2, Lithium, uses 12162-79-7D, Lithium manganese oxide  $\text{LiMnO}_2$ , chromium, cobalt, nickel-doped 346417-97-8, Cobalt lithium manganese nickel oxide ( $\text{Co}_0.3\text{LiMn}_0.3\text{Ni}_0.3\text{SO}_2$ ) 911143-90-3  
 911143-93-6 913655-44-4 913655-46-6
- RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (synthesis and electrochem. properties of  $\text{Li}[\text{Mn1/3-x/3Ni1/3-x/3Co1/3-x/3Crx}]O2$  as cathode materials for lithium-ion secondary batteries)
- AB The layered  $\text{Li}[\text{Mn1/3-x/3Ni1/3-x/3Co1/3-x/3Crx}]O2$  ( $x = 0, 0.015, 0.025, 0.050, 0.100$ ) materials were prepared by means of an improved solid-state reaction, and their phys. and electrochem. properties were investigated by XRD, SEM and electrochem. testing techniques. When  $x = 0$  and 0.015, the mean size of samples is about 800 nm and the samples have uniform morphol. and normal grain-size distribution. The materials showed only one plateau between 2.5V~4.5V. A significant structure transformation to the spinel-type phase was not found in the charge-discharge cycling. The layered structure was stabilized and the discharge capacity was also increased by doping appropriate amount of Cr<sup>3+</sup>. The 1.5 mol% chromium-doped active materials exhibited the best cycle performance. It delivered an initial discharge capacity of 138.60 mAh · g<sup>-1</sup> in a cut-off range between 2.5 V and 4.5 V at room temperature, but the capacity and retention were found to decrease when the concentration of Cr<sup>3+</sup> was over 1.5 mol%.
- L3 ANSWER 58 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:1239152 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 144:8986
- TITLE: Production of lithium compound oxides having layered crystal structure as cathodes for secondary lithium batteries
- INVENTOR(S): Hara, Kenji; Hirahata, Shoji; Suzuki, Katsunori  
 PATENT ASSIGNEE(S): Shin-Kobe Electric Machinery Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.  
 CODEN: JKXXAF
- DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:
- | PATENT NO.    | KIND | DATE     | APPLICATION NO. | DATE     |
|---------------|------|----------|-----------------|----------|
| JP 2005327644 | A    | 20051124 | JP 2004-145784  | 20040517 |
- PRIORITY APPLN. INFO.: JP 2004-145784 20040517
- TI Production of lithium compound oxides having layered crystal structure as cathodes for secondary lithium batteries
- IT Secondary batteries  
 (lithium; production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)
- IT Carbonates, processes  
 Hydroxides (inorganic)  
 Nitrates, processes  
 Oxides (inorganic), processes  
 Sulfates, processes

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
     (of metals; in production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)  
 IT Battery cathodes  
 Coprecipitation  
     (production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)  
 IT 856700-33-9P, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.34O2) 870011-39-5P 870011-40-8P  
     870011-41-9P 870011-42-0P 870011-75-9P  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
     (cathodes; production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)  
 IT 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 7487-88-9, Magnesium sulfate, processes 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate 10124-43-3, Cobalt sulfate  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
     (in production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)

AB The lithium compound oxides are expressed by  $\text{Li}_{\alpha}\text{Ni}_{\beta}\text{Mn}_{\gamma}\text{Co}_{\delta}\text{Mg}_{\epsilon}\text{O}_2$  ( $\alpha > \beta \geq c, d = 0.001-0.02$ , as mol. ratio). The compound oxides are produced by a process comprising steps of (1) producing solvents at least containing (dissolved) Ni compds., Mn compds., Co compds., and Mg compds., (2) copptg. at least Ni, Mn, Co, and Mg, and adding Li compds. to give compound oxide precursors, and (3) firing the precursors. The compds. of each metals may be selected from oxides, hydroxides, nitrates, sulfates, and/or carbonates. Secondary lithium batteries employing the cathodes are also claimed. The cathodes show uniform crystal structure and the batteries provide high output power even at low temperature environment.

L3 ANSWER 59 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:1174996 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 143:443512  
 TITLE: Lithium mixed oxide cathode active materials for nonaqueous secondary lithium batteries, method for their manufacture, and nonaqueous secondary lithium batteries  
 INVENTOR(S): Inada, Fumi; Nakajima, Motoe  
 PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005310744	A	20051104	JP 2004-376870	20041227
PRORITY APPLN. INFO.: JP 2004-86962 A 20040324				
TI Lithium mixed oxide cathode active materials for nonaqueous secondary lithium batteries, method for their manufacture, and nonaqueous secondary lithium batteries				
IT Sol-gel processing (coating; formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)				

- IT Battery cathodes  
(formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)
- IT Coating process  
(sol-gel; formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)
- IT 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.402)  
247565-43-1P, Lithium manganese nickel oxide (Li1.05Mn0.3Ni0.702)  
868657-81-2P, Cobalt lithium manganese nickel oxide (Co0.31Li1.1Mn0.3Ni0.3802) 868657-82-3P  
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
(formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)
- IT 2414-98-4, Magnesium diethoxide 3087-36-3, Titanium tetraethoxide 3173-69-1, Tin tetrathioxide 4073-85-2, Aluminum tripropoxide 13963-57-0 14024-63-6 23519-77-9, Zirconium tetrapropoxide  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(metal compound coatings from; formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)
- IT 64-17-5, Ethanol, uses 67-63-0, 2-Propanol, uses 7732-18-5, Water, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(solvent; formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)
- AB The cathode active materials consist of Li transition metal mixed oxide particles having their surfaces modified with 10-70 nm-thick metal compound layers containing  $\geq 1$  of Al, Mg, Sn, Ti, Zn, and Zr. The oxide particles may have composition formula  $\text{Li}_{a} \text{Mn}_x \text{Ni}_y \text{MzO}_2$  ( $M = \text{Co}$  and/or  $\text{Al}$ ;  $a = 1-1.2$ ;  $x = 0-0.65$ ;  $y = 0.35-1$ ;  $z = 0-0.65$ ;  $x + y + z = 1$ ) and layer crystal structure. Method for manufacture of the active materials includes preparation of Li transition metal mixed oxide, followed by its surface modification by mixing the oxide with a solvent containing metal compds. and its treatment by irradiation with ultrasonic wave. Further specified conditions for the manufacturing processes, including granulation and heat treatment are also given. Nonaq. Li secondary batteries with cathodes comprising the claimed cathode active materials are also claimed. Batteries showing high power output are obtained.
- L3 ANSWER 60 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2005:1142666 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 145:66108  
TITLE: Effect of aluminum doping on electrochemical behaviors of layered  $\text{Li}[\text{Ni}1/3\text{Co}1/3\text{Mn}1/3]\text{O}_2$  cathode materials  
AUTHOR(S): Ye, Shang-yun; Zhang, Ping-wei; Qiao, Zhi-yu  
CORPORATE SOURCE: Department of Physics and Chemistry, University of Science and Technology Beijing, Beijing, 100083, Peop. Rep. China  
SOURCE: Zhongguo Youse Jinshu Xuebao (2005), 15(Spec. 1), 51-55  
CODEN: ZYJXFK; ISSN: 1004-0609  
PUBLISHER: Kexue Chubanshe  
DOCUMENT TYPE: Journal  
LANGUAGE: English

TI Effect of aluminum doping on electrochemical behaviors of layered Li[Ni1/3Co1/3Mn1/3]O2 cathode materials  
 IT Battery cathodes  
     (effect of aluminum doping on electrochem. behavior of layered Li[Ni1/3Co1/3Mn1/3]O2 cathode materials for lithium batteries  
 )  
 IT Secondary batteries  
     (lithium; effect of aluminum doping on electrochem. behavior of layered Li[Ni1/3Co1/3Mn1/3]O2 cathode materials for lithium batteries  
 )  
 IT 346417-97-8, Cobalt lithium manganese nickel oxide  
     (Co0.33LiMn0.33Ni0.33O2) 891862-53-6D, manganese-deficient  
     891862-54-7  
     RL: DEV (Device component use); USES (Uses)  
         (effect of aluminum doping on electrochem. behavior of layered Li[Ni1/3Co1/3Mn1/3]O2 cathode materials for lithium batteries  
 )  
 IT 7429-90-5, Aluminum, uses  
     RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
         (effect of aluminum doping on electrochem. behavior of layered Li[Ni1/3Co1/3Mn1/3]O2 cathode materials for lithium batteries  
 )  
 IT 99627-76-6, Cobalt manganese nickel oxide (CoMnNiO4) 602297-52-9, Cobalt  
     manganese nickel hydroxide (Co0.33Mn0.33Ni0.33(OH)2)  
     RL: PRP (Properties)  
         (effect of aluminum doping on electrochem. behavior of layered Li[Ni1/3Co1/3Mn1/3]O2 cathode materials for lithium batteries  
 )  
 AB The mixed transition metal compound,  $Li_{1+y}[Ni1/3Co1/3Mn(1/3-y)Al_y]O_2$  ( $x = 0$ ,  $0.04$ ;  $y = 0$ ,  $0.04$ ), was synthesized via copptn. followed by high-temperature heat-treatment. XRD revealed that this material has a typical layered structure with R3m space group. Spherical morphol. with secondary particles were observed by SEM and the size of powder could be controlled by the copptn. and calcination process. Al doping and Li excess were effective for the improvement of phys. properties such as crystallinity, morphol. and d. These improved phys. characteristics can enhance the capacity, retention and rate capability, even though the electrodes are cycled between 3.0 and 4.6 V.  
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 61 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:1130979 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 143:408200  
 TITLE: Secondary nonaqueous electrolyte battery  
 INVENTOR(S): Deguchi, Masaki; Matsui, Tooru; Yoshizawa, Hiroshi;  
                  Onuki, Masamichi; Kinoshita, Shinichi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan;  
                  Mitsubishi Chemical Corporation  
 SOURCE: PCT Int. Appl., 23 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005099023	A1	20051020	WO 2005-JP6372	20050331
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,				

CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SX, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG	
CN 1943072 A 20070404 CN 2005-80011972 20050331	
US 20070218370 A1 20070920 US 2006-547172 20061002	
KR 816613 B1 20080324 KR 2006-723252 20061106	
PRIORITY APPLN. INFO.: JP 2004-113203 A 20040407	
	WO 2005-JP6372 W 20050331

OTHER SOURCE(S): MARPAT 143:408200

TI Secondary nonaqueous electrolyte battery

IT Battery cathodes

Battery electrolytes

(cathodes containing lithium transition metal composite oxides and  
electrolytes containing phosphinate compds. for secondary lithium  
batteries)

IT Secondary batteries

(lithium; cathodes containing lithium transition metal composite oxides and  
electrolytes containing phosphinate compds. for secondary lithium  
batteries)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate  
7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
21324-40-3, Lithium hexafluorophosphate 14419-56-7, Cobalt lithium  
magnesium oxide (Co<sub>0.95</sub>LiMg<sub>0.05</sub>O<sub>2</sub>) 157616-77-8, Cobalt lithium tin oxide  
(Co<sub>0.98</sub>LiSn<sub>0.02</sub>O<sub>2</sub>) 162023-33-8, Cobalt iron lithium oxide  
(Co<sub>0.98</sub>Fe<sub>0.02</sub>LiO<sub>2</sub>) 164175-46-6, Aluminum lithium nickel oxide  
(Al<sub>0.05</sub>LiNi<sub>0.95</sub>O<sub>2</sub>) 174735-00-3, Cobalt lithium vanadium oxide  
(Co<sub>0.98</sub>LiV<sub>0.02</sub>O<sub>2</sub>) 193214-24-3, Aluminum cobalt lithium nickel oxide  
(Al<sub>0.05</sub>Co<sub>0.15</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) 198213-70-6, Cobalt lithium magnesium oxide  
(Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) 198213-74-0, Cobalt lithium magnesium oxide  
(Co<sub>0.9</sub>LiMg<sub>0.1</sub>O<sub>2</sub>) 253875-50-2, Cobalt lithium titanium oxide  
(Co<sub>0.98</sub>LiTi<sub>0.02</sub>O<sub>2</sub>) 380413-92-3, Cobalt lithium tantalum oxide  
(Co<sub>0.98</sub>LiTa<sub>0.02</sub>O<sub>2</sub>) 380413-94-5, Cobalt lithium niobium oxide  
(Co<sub>0.98</sub>LiNb<sub>0.02</sub>O<sub>2</sub>) 459409-01-9, Aluminum cobalt lithium oxide  
(Al<sub>0.02</sub>Co<sub>0.98</sub>LiO<sub>2</sub>) 583048-68-4, Cobalt lithium yttrium oxide  
(Co<sub>0.98</sub>LiY<sub>0.02</sub>O<sub>2</sub>) 846020-48-2 865649-44-1, Calcium cobalt  
lithium oxide (Ca<sub>0.02</sub>Co<sub>0.98</sub>LiO<sub>2</sub>) 865649-45-2, Cobalt lithium strontium  
oxide (Co<sub>0.98</sub>LiSr<sub>0.02</sub>O<sub>2</sub>) 865649-46-3, Cobalt gallium lithium oxide  
(Co<sub>0.98</sub>Ga<sub>0.02</sub>LiO<sub>2</sub>) 867249-10-3, Cobalt lithium zinc oxide  
(Co<sub>0.98</sub>LiZn<sub>0.02</sub>O<sub>2</sub>) 867249-11-4, Cobalt lithium borate oxide  
(Co<sub>0.98</sub>Li(BO<sub>3</sub>)<sub>0.02</sub>O<sub>1.94</sub>) 867249-12-5, Chromium cobalt lithium oxide  
(Cr<sub>0.02</sub>Co<sub>0.98</sub>LiO<sub>2</sub>) 867249-13-6, Cobalt lithium oxide silicate  
(Co<sub>0.98</sub>LiO<sub>1.92</sub>(SiO<sub>4</sub>)<sub>0.02</sub>) 867249-14-7, Cobalt lithium oxide phosphate  
(Co<sub>0.98</sub>LiO<sub>1.92</sub>(PO<sub>4</sub>)<sub>0.02</sub>) 867249-15-8, Antimony cobalt lithium oxide  
(Sb<sub>0.02</sub>Co<sub>0.98</sub>LiO<sub>2</sub>) 867249-16-9, Cobalt lithium molybdenum oxide  
(Co<sub>0.98</sub>LiMo<sub>0.02</sub>O<sub>2</sub>) 867249-17-0, Cobalt lithium tungsten oxide  
(Co<sub>0.98</sub>LiW<sub>0.02</sub>O<sub>2</sub>) 867249-18-1, Cobalt lithium zirconium oxide  
(Co<sub>0.98</sub>LiZr<sub>0.02</sub>O<sub>2</sub>)

RL: DEV (Device component use); USES (Uses)

(cathodes containing lithium transition metal composite oxides and  
electrolytes containing phosphinate compds. for secondary lithium  
batteries)

IT 872-36-6, Vinylene carbonate 2227-43-2 4427-96-7, Vinyl ethylene  
carbonate 4775-09-1, Ethyl diethyl phosphinate 7100-92-7 10545-62-7  
14337-77-0, Methyl dimethyl phosphinate 867249-19-2

RL: MOA (Modifier or additive use); USES (Uses)  
 (cathodes containing lithium transition metal composite oxides and  
 electrolytes containing phosphinate compds. for secondary lithium  
 batteries)

AB The battery has a separator between a Li-intercalating anode and  
 a Li-intercalating cathode and a nonaq. electrolyte solution; where the  
 cathode contains a cathode active mass:  $\text{LiM}_1\text{-xL}_x\text{O}_2$  ( $x = 0.005\text{-}0.1$ ; M = Mn,  
 Co, and/or Ni, and L = Mg, Al, Ti, Sr, Zn, B, Ca, Cr, Si, Ga, Sn, P, V,  
 Sb, Nb, Ta, Mo, W, Zr, Y, and/or Fe); and the electrolyte solution contains a  
 phosphinate compound  $\text{R}_1\text{O}(\text{P}(\text{O})\text{R}_2\text{R}_3)$  ( $\text{R}_1, \text{R}_2$  and  $\text{R}_3$  = aryl, C1-5 alkyl, C1-5  
 alkenyl, or C1-5 alkynyl group).

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 62 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:1130978 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 143:408199  
 TITLE: Secondary nonaqueous electrolyte battery  
 INVENTOR(S): Deguchi, Masaki; Matsui, Tooru; Yoshizawa, Hiroshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 20 pp.

DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005099022	A1	20051020	WO 2005-JP4655	20050316
W: AB, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, ZN, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CN 1806362	A	20060719	CN 2005-80000503	20050316
EP 1734607	A1	20061220	EP 2005-720909	20050316
R: DE, FR, GB				
US 2006083988	A1	20060420	US 2005-287446	20051128
PRIORITY APPLN. INFO.:			JP 2004-113208	A 20040407
			WO 2005-JP4655	W 20050316

TI Secondary nonaqueous electrolyte battery  
 IT Battery cathodes  
 IT      Battery electrolytes  
 (cathode containing lithium nickel composite oxides and electrolytes  
 containing  
 vinyl ethylene carbonate for secondary lithium batteries)  
 IT Secondary batteries  
 (lithium; cathode containing lithium nickel composite oxides and  
 electrolytes containing vinyl ethylene carbonate for secondary lithium  
 batteries)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 623-53-0,  
 Ethyl methyl carbonate 7782-42-5, Graphite, uses 12190-79-3, Cobalt  
 lithium oxide (CoLiO<sub>2</sub>) 21324-40-3, Lithium hexafluorophosphate  
 101920-93-8, Cobalt lithium nickel oxide (Co0.5LiNi0.5O<sub>2</sub>) 113066-90-3,

Cobalt lithium nickel oxide (Co0.6LiNi0.402) 116327-68-5, Cobalt lithium nickel oxide (Co0.3LiNi0.702) 116327-69-6, Cobalt lithium nickel oxide (Co0.1LiNi0.902) 118557-81-6, Cobalt lithium nickel oxide (Co0.7LiNi0.302) 128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502) 143623-49-8, Cobalt lithium nickel oxide (Co0.25LiNi0.7502) 179186-41-5, Lithium manganese nickel oxide (LiMn0.7Ni0.302) 193214-24-3, Aluminum cobalt lithium nickel oxide (Al0.05Co0.15LiNi0.802) 193215-92-8, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.4Ni0.502) 195880-90-1, Cobalt lithium magnesium nickel oxide (Co0.15LiMg0.05Ni0.802) 203005-76-9, Cobalt lithium nickel borate oxide (Co0.15LiNi0.8(B03)0.0501.85) 216385-46-5, Cobalt lithium nickel tin oxide (Co0.15LiNi0.85Sn0.05O2) 216385-49-8, Cobalt lithium nickel oxide silicate (Co0.15LiNi0.801.8(SiO4)0.05) 216385-50-1, Cobalt iron lithium nickel oxide (Co0.15Fe0.05LiNi0.802) 216385-51-2, Cobalt lithium nickel titanium oxide (Co0.15LiNi0.8T10.05O2) 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 849416-68-8, Cobalt lithium nickel niobium oxide (Co0.15LiNi0.8Nb0.05O2) 859529-03-6, Cobalt gallium lithium nickel oxide (Co0.15Ga0.05LiNi0.802) 867248-92-8, Cobalt lithium nickel strontium oxide (Co0.15LiNi0.8S0.05O2) 867248-93-9, Cobalt lithium nickel zinc oxide (Co0.15LiNi0.8Zn0.05O2) 867248-94-0, Calcium cobalt lithium nickel oxide (Ca0.05Co0.15LiNi0.802) 867248-95-1, Chromium cobalt lithium nickel oxide (Cr0.05Co0.15LiNi0.802) 867248-96-2, Cobalt lithium nickel oxide phosphate (Co0.15LiNi0.801.8(P04)0.05) 867248-97-3, Cobalt lithium nickel vanadium oxide (Co0.15LiNi0.8V0.05O2) 867248-98-4, Antimony cobalt lithium nickel oxide (Sb0.05Co0.15LiNi0.802) 867248-99-5, Cobalt lithium nickel tantalum oxide (Co0.15LiNi0.8Ta0.05O2) 867249-00-1, Cobalt lithium molybdenum nickel oxide (Co0.15LiMo0.05Ni0.802) 867249-01-2, Cobalt lithium nickel zirconium oxide (Co0.15LiNi0.8Zr0.05O2) 867249-02-3, Cobalt lithium nickel yttrium oxide (Co0.15LiNi0.8Y0.05O2) 867249-03-4 867249-04-5 867249-05-6 867249-06-7

RL: DEV (Device component use); USES (Uses)  
(cathode containing lithium nickel composite oxides and electrolytes containing

vinyl ethylene carbonate for secondary lithium batteries)

IT 4427-96-7, Vinyl ethylene carbonate

RL: MOA (Modifier or additive use); USES (Uses)  
(cathode containing lithium nickel composite oxides and electrolytes containing

vinyl ethylene carbonate for secondary lithium batteries)

AB The battery comprises a separator between a Li-intercalating cathode and a Li-intercalating anode and a nonaq. electrolyte solution; where the cathode contains. The pos. electrode contains a composite oxide: LiNi<sub>x</sub>M<sub>1-x-y</sub>LyO<sub>2</sub> (x = 0.3-0.9; y = 0-0.1; M = Co and/or Mn; and L = Mg, Al, Ti, Sr, Zn, B, Ca, Cr, Si, Ga, Sn, P, V, Sb, Nb, Ta, Mo, W, Zr, Y, and/or Fe) as an active mass; and the electrolyte solution contains a main solvent, an electrolyte salt, and vinyl ethylene carbonate.

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 63 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:1115641 CAPLUS <>LOGINID:::20080630>>

DOCUMENT NUMBER: 145:86348

TITLE: The study on the performance of

LiNi<sub>1/3</sub>Co<sub>1/4</sub>Mn<sub>1/3</sub>Li<sub>1/2</sub>O<sub>2</sub> (M = Al, Ti)

AUTHOR(S): Tan, Bai-shan; Han, En-shan; Li, Peng

CORPORATE SOURCE: Tianjin EPC Petrochemical Engineering Co., Ltd., Tianjin, 300400, Peop. Rep. China

SOURCE: Dianchi (2005), 35(4), 259-260

CODEN: DNCEHP; ISSN: 1001-1579

PUBLISHER: Dianchi Zazhishe

DOCUMENT TYPE: Journal  
 LANGUAGE: Chinese  
 TI The study on the performance of LiNi<sub>1</sub>/3Co<sub>1</sub>/4Mn<sub>1</sub>/3M<sub>1</sub>/12O<sub>2</sub> (M = Al, Ti)  
 IT Battery cathodes  
     (LiNi<sub>1</sub>/3Co<sub>1</sub>/4Mn<sub>1</sub>/3M<sub>1</sub>/12O<sub>2</sub> (M = Al, Ti) cathode materials for lithium batteries)  
 IT Secondary batteries  
     (lithium; LiNi<sub>1</sub>/3Co<sub>1</sub>/4Mn<sub>1</sub>/3M<sub>1</sub>/12O<sub>2</sub> (M = Al, Ti) cathode materials for lithium batteries)  
 IT 894108-26-0 894108-27-1  
 RL: DEV (Device component use); USES (Uses)  
     (LiNi<sub>1</sub>/3Co<sub>1</sub>/4Mn<sub>1</sub>/3M<sub>1</sub>/12O<sub>2</sub> (M = Al, Ti) cathode materials for lithium batteries)  
 AB LiNi<sub>1</sub>/3Co<sub>1</sub>/4Mn<sub>1</sub>/3M<sub>1</sub>/12O<sub>2</sub> (M = Al, Ti) was prepared by copptn. at 800° and calcined for 9 h. The material was characterized by XRD, DSC and charge-discharge tests. The stability of LiNi<sub>1</sub>/3Co<sub>1</sub>/4Mn<sub>1</sub>/3M<sub>1</sub>/12O<sub>2</sub> (M = Al,Ti) exothermic decomposition reaction was higher than that of LiNi<sub>1</sub>/3Co<sub>1</sub>/3Mn<sub>1</sub>/3O<sub>2</sub> at 4.3 V due to doping with Al and Ti.

L3 ANSWER 64 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 20051049231 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 143:349928  
 TITLE: Nonaqueous electrolyte secondary batteries with lithium mixed oxide cathodes  
 INVENTOR(S): Matsui, Toru; Deguchi, Masaki; Yoshizawa, Hiroshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokyo Koho, 16 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005267911	A	20050929	JP 2004-75110	20040316
PRIORITY APPLN. INFO.:			JP 2004-75110	20040316
TI Nonaqueous electrolyte secondary batteries with lithium mixed oxide cathodes				
IT Secondary batteries (nonaq.; secondary batteries with lithium mixed oxide cathodes and nonaq. electrolytes containing diallyl carbonate as additives)				
IT Battery electrolytes (secondary batteries with lithium mixed oxide cathodes and nonaq. electrolytes containing dialyl carbonate as additives)				
IT 101920-93-8, Cobalt lithium nickel oxide (Co <sub>0.5</sub> LiNi <sub>0.5</sub> O <sub>2</sub> ) 113066-89-0, Cobalt lithium nickel oxide (Co <sub>0.5</sub> LiNi <sub>0.8</sub> O <sub>2</sub> ) 118819-08-2, Cobalt lithium manganese oxide (Co <sub>0.5</sub> LiMn <sub>0.5</sub> O <sub>2</sub> ) 128975-24-6, Lithium manganese nickel oxide (Li <sub>2</sub> MnNiO <sub>4</sub> ) 142447-10-7, Cobalt lithium manganese oxide (Co <sub>0.75</sub> LiMn <sub>0.25</sub> O <sub>2</sub> ) 143623-49-8, Cobalt lithium nickel oxide (Co <sub>0.25</sub> LiNi <sub>0.75</sub> O <sub>2</sub> ) 144419-56-7, Cobalt lithium magnesium oxide (Co <sub>0.95</sub> LiMg <sub>0.05</sub> O <sub>2</sub> ) 149319-02-8, Cobalt lithium nickel oxide (Co <sub>0.75</sub> LiNi <sub>0.25</sub> O <sub>2</sub> ) 152066-41-6, Cobalt lithium manganese nickel oxide (Co <sub>0.45</sub> LiMn <sub>0.1</sub> Ni <sub>0.45</sub> O <sub>2</sub> ) 193214-25-4, Aluminum cobalt lithium nickel oxide (Al <sub>0.05</sub> Co <sub>0.2</sub> LiNi <sub>0.7</sub> O <sub>2</sub> ) 193214-39-0, Aluminum cobalt lithium nickel oxide (Al <sub>0.1</sub> Co <sub>0.2</sub> LiNi <sub>0.7</sub> O <sub>2</sub> ) 193214-51-6, Aluminum cobalt lithium nickel oxide (Al <sub>0.15</sub> Co <sub>0.2</sub> LiNi <sub>0.65</sub> O <sub>2</sub> ) 197389-21-2, Aluminum lithium nickel oxide (Al <sub>0.03</sub> LiNi <sub>0.97</sub> O <sub>2</sub> ) 198213-70-6, Cobalt lithium magnesium oxide (Co <sub>0.98</sub> LiMg <sub>0.02</sub> O <sub>2</sub> ) 200938-46-1, Lithium manganese nickel oxide (Li <sub>2</sub> Mn <sub>1.5</sub> Ni <sub>0.5</sub> O <sub>4</sub> ) 225662-79-3, Aluminum cobalt lithium nickel oxide (Al <sub>0.01</sub> Co <sub>0.2</sub> LiNi <sub>0.79</sub> O <sub>2</sub> ) 248581-94-4, Cobalt lithium manganese oxide				

(Co0.5Li<sub>2</sub>Mn1.5O<sub>4</sub>) 346417-97-8, Cobalt lithium manganese nickel oxide  
 (Co0.33LiMn0.33Ni10.33O<sub>2</sub>) 405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni10.45O<sub>2</sub>) 459409-01-9, Aluminum cobalt lithium oxide  
 (Al0.02Co0.98LiO<sub>2</sub>) 659718-68-0, Aluminum cobalt lithium nickel oxide  
 (Al0.03Co0.2LiNi10.77O<sub>2</sub>) 781672-36-4, Lithium manganese nickel oxide  
 (LiMn0.25Ni10.75O<sub>2</sub>) 865649-43-0, Cobalt lithium manganese nickel oxide  
 (Co0.45LiMn0.45Ni0.102) 865649-44-1, Calcium cobalt lithium oxide  
 (Ca0.02Co0.98LiO<sub>2</sub>) 865649-45-2, Cobalt lithium strontium oxide  
 (Co0.98Li<sub>2</sub>Ir0.02O<sub>2</sub>) 865649-46-3, Cobalt gallium lithium oxide  
 (Co0.98Ga0.02LiO<sub>2</sub>) 865649-47-4, Gallium lithium nickel oxide  
 (Ga0.03LiNi10.97O<sub>2</sub>) 865649-48-5 865649-49-6, Aluminum cobalt lithium nickel oxide (Al0.07Co0.2LiNi10.73O<sub>2</sub>) 865649-50-9, Aluminum cobalt lithium nickel oxide (Al0.12Co0.2LiNi10.68O<sub>2</sub>)  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
     (cathode active material; secondary batteries with lithium mixed oxide cathodes and nonaq. electrolytes containing diallyl carbonate as additives)  
 IT 872-36-6, Vinylene carbonate 15022-08-9, Diallyl carbonate  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
     (electrolyte additive; secondary batteries with lithium mixed oxide cathodes and nonaq. electrolytes containing diallyl carbonate as additives)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 623-53-0,  
 Ethyl methyl carbonate  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
     (electrolyte solvent; secondary batteries with lithium mixed oxide cathodes and nonaq. electrolytes containing diallyl carbonate as additives)  
 IT 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
     (electrolyte; secondary batteries with lithium mixed oxide cathodes and nonaq. electrolytes containing diallyl carbonate as additives)  
 AB The batteries comprise cathodes including Li<sub>A</sub>O<sub>2</sub> (A is ≥ 2 selected from Mn, Co, and Ni) or Li<sub>B</sub>1-wCwO<sub>2</sub> (B = Mn, Co, and/or Ni; C = Mg, Ca, Sr, Al, and/or Ga; w = 0.005-0.1) as active materials, anodes, and nonaq. electrolytes including a main solvent, solute, and diallyl carbonate as additive. The electrolytes may also contain vinylene carbonate as additive. The batteries show excellent cycle performance and prevented emission of gases at high temperature

L3 ANSWER 65 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:1020932 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 143:289504  
 TITLE: Secondary lithium ion battery with cathode containing lithium nickel manganese cobalt mixed oxide  
 INVENTOR(S): Yagi, Akinaka; Yamaki, Takahiro; Kasai, Masahiro  
 PATENT ASSIGNEE(S): Shin-Kobe Electric Machinery Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005259617	A	20050922	JP 2004-71854	20040315

PRIORITY APPLN. INFO.: JP 2004-71854 20040315

TI Secondary lithium ion battery with cathode containing lithium nickel manganese cobalt mixed oxide

IT Secondary batteries  
(lithium; secondary lithium ion battery with cathode containing lithium nickel manganese cobalt mixed oxide)

IT Battery cathodes  
(secondary lithium ion battery with cathode containing lithium nickel manganese cobalt mixed oxide)

IT 864433-91-0 864433-93-2, Cobalt lithium manganese nickel oxide (Co<sub>0.3</sub>Li<sub>0.34</sub>Mn<sub>0.36</sub>NiO<sub>2</sub>) 864433-95-4, Cobalt lithium manganese nickel oxide (Co<sub>0.21</sub>Li<sub>0.25</sub>Mn<sub>0.55</sub>O<sub>2</sub>) 864433-97-6 864434-00-4

RL: DEV (Device component use); USES (Uses)  
(secondary lithium ion battery with cathode containing lithium nickel manganese cobalt mixed oxide)

AB The claimed battery is equipped with cathode active mass containing hexagonal layered-structure mixed oxide Li<sub>x</sub>Mn<sub>y</sub>Co<sub>z</sub>Mn<sub>2</sub> (M = Fe, Cr, Cu, Al, Mg, Si; X + Y + Z + α = 1; X = 0.25-0.55; Y = 0.25-0.55; Z = 0.15-0.4; α = 0-0.1) for active mass coating amount 8.0-14.5 mg/cm<sup>2</sup>. The battery provides high power output under ultralow temperature environment.

L3 ANSWER 66 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2005:962566 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 143:251015  
TITLE: Cathode active material with improved cycling stability for lithium ion batteries  
INVENTOR(S): Bormet, Steffen; Reim, Joerg; Rentsch, Harald; Schelling, Volker  
PATENT ASSIGNEE(S): Ferro G.m.b.H., Germany  
SOURCE: PCT Int. Appl., 18 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005081338	A1	20050901	WO 2005-EP600	20050121
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 102004008397	A1	20050908	DE 2004-102004008397	20040220
PRIORITY APPLN. INFO.:			DE 2004-102004008397A	20040220
TI Cathode active material with improved cycling stability for lithium ion batteries				
IT Ball milling				
Battery cathodes				
Grinding (machining)				
Heat treatment				
(cathode active material with improved cycling stability for lithium ion batteries)				

- IT Secondary batteries  
     (lithium; cathode active material with improved cycling stability for lithium ion batteries)
- IT 7439-93-2, Lithium, uses 7439-93-2D, Lithium, compound  
   RL: DEV (Device component use); USES (Uses)  
     (cathode active material with improved cycling stability for lithium ion batteries)
- IT 405890-05-3P, Cobalt lithium manganese nickel oxide  
     (Co0.1LiMn0.45Ni0.45O2) 863498-38-8P 863498-39-9P 863498-40-2P  
     863498-41-3P 863498-42-4P 863498-43-5P  
     863498-44-6P 863498-45-7P 863498-46-8P 863498-47-9P  
     863499-34-7P  
   RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
     (cathode active material with improved cycling stability for lithium ion batteries)
- AB The invention relates to a pos. active electrode material for use in rechargeable lithium ion batteries, to a lithium secondary cell having the electrode material according to the invention, and to a method for the production of the latter. The cathode active material is:  
 $\text{LaAnNil-x-y-zMnxCoyMzO}_2$ , where M = Nb and/or Ta, and  $1.00 \leq a \leq 1.15$ ,  $0.5 < x+y+z < 1.0$ ,  $0.1 < x < 0.5$ ,  $0.01 < y < 0.3$ , and  $0 < z \leq 0.1$ .
- REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 67 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:572419 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 143:81215  
 TITLE: Cathode material for lithium secondary battery  
 INVENTOR(S): Yuasa, Toyotaka; Kasai, Masahiro  
 PATENT ASSIGNEE(S): Japan  
 SOURCE: U.S. Pat. Appl. Publ., 13 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050142442	A1	20050630	US 2004-20034	20041223
JP 2005197004	A	20050721	JP 2003-435660	20031226
JP 4100341	B2	20080611		
CN 1638173	A	20050713	CN 2004-10011485	20041224
PRIORITY APPLN. INFO.:			JP 2003-435660	A 20031226
TI Cathode material for lithium secondary battery				
IT Battery cathodes				
Surface area (cathode material for lithium secondary battery)				
IT Secondary batteries (lithium; cathode material for lithium secondary battery)				
IT 186298-15-7 186298-17-9 217309-43-8, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.4O2) 478037-17-1 493326-93-5, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.34Ni0.33O2) 681160-59-8, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.4Ni0.3O2) 855998-68-4, Cobalt lithium manganese nickel oxide (Co0.1-0.6Li10-1.2Mn0.1-0.9Ni0-0.44O2) 855998-69-5 855998-70-8 855998-71-9 855998-72-0 855998-73-1 855998-74-2 855998-75-3 855998-76-4 855998-77-5 855998-78-6 855998-79-7 855998-80-0				
RL: DEV (Device component use); USES (Uses) (cathode material for lithium secondary battery)				

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (cathode material for lithium secondary battery)

AB A pos. electrode material for a nonaq. lithium secondary battery and a lithium secondary battery that has superior cycle life and safety and reduced internal resistance of the battery at low temperature is provided. The pos. electrode material for a nonaq. lithium secondary battery comprises a layered structured complex oxide expressed by a composition formula  $\text{Li}_a\text{Mn}_x\text{Ni}_y\text{Co}_z\text{Mn}_w\text{O}_2$ , where  $0 < a \leq 1.2$ ,  $0.1 \leq x \leq 0.9$ ,  $0 \leq y \leq 0.44$ ,  $0.1 \leq z \leq 0.6$ ,  $0.01 \leq a \leq 0.1$ , and  $x+y+z+w=1$ . A diffraction peak intensity ratio between the (003) plane and the (104) plane ( $I(003)/I(104)$ ) in an X-ray powder diffractometry using a Cu-K $\alpha$  line in the X-ray source is not less than 1.0 and not more than 1.5.

L3 ANSWER 68 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:572418 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 143:100336  
 TITLE: Lithium ion secondary battery  
 INVENTOR(S): Yamaki, Takahiro; Arai, Juichi  
 PATENT ASSIGNEE(S): Japan  
 SOURCE: U.S. Pat. Appl. Publ., 12 pp.  
 CODEN: USXKC0  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050142440	A1	20050630	US 2004-17944	20041222
JP 2005197002	A	20050721	JP 2003-435626	20031226
FR 2864708	A1	20050701	FR 2004-53227	20041224
PRIORITY APPLN. INFO.:			JP 2003-435626	A 20031226
TI Lithium ion secondary battery				
IT Battery anodes				
Battery cathodes				
(lithium ion secondary battery)				
IT Secondary batteries				
(lithium; lithium ion secondary battery)				
IT 7782-42-5, Graphite, uses 12057-17-9, Lithium manganese oxide (LiMn <sub>2</sub> O <sub>4</sub> ) 12190-79-3, Cobalt lithium oxide (CoLiO <sub>2</sub> ) 21324-40-3, Lithium hexafluorophosphate 187100-95-4, Aluminum lithium nickel oxide (Al <sub>0.05</sub> -0.3LiNi <sub>0.7</sub> -0.9502) 190902-96-6, Cobalt lithium nickel oxide (Co <sub>0.05</sub> -0.3LiNi <sub>0.7</sub> -0.9502) 193214-24-3, Aluminum cobalt lithium nickel oxide (Al <sub>0.05</sub> Co <sub>0.15</sub> LiNi <sub>0.8</sub> 02) 193215-96-2, Cobalt lithium manganese nickel oxide (Co <sub>0.2</sub> LiMn <sub>0.4</sub> Ni <sub>0.4</sub> 02) 856700-19-1 856700-20-4 856700-21-5 856700-22-6 856700-24-8 856700-26-0 856700-28-2, Lithium manganese nickel oxide (LiMn <sub>0.05</sub> -0.3Ni <sub>0.7</sub> -0.9502) 856700-29-3, Iron lithium nickel oxide (Fe <sub>0.05</sub> -0.3LiNi <sub>0.7</sub> -0.9502) 856700-30-6, Chromium lithium nickel oxide (Cr <sub>0.05</sub> -0.3LiNi <sub>0.7</sub> -0.9502) 856700-31-7, Copper lithium nickel oxide (Cu <sub>0.05</sub> -0.3LiNi <sub>0.7</sub> -0.9502) 856700-32-8, Lithium magnesium nickel oxide (LiMg <sub>0.05</sub> -0.3Ni <sub>0.7</sub> -0.9502) 856700-33-9, Cobalt lithium manganese nickel oxide (Co <sub>0.33</sub> LiMn <sub>0.33</sub> Ni <sub>0.34</sub> 02) 856700-34-0 856700-35-1, Cobalt lithium manganese nickel oxide (Co <sub>0.33</sub> LiMn <sub>0.33</sub> Ni <sub>0.40</sub> 2)				
RL: DEV (Device component use); USES (Uses)				
(lithium ion secondary battery)				
AB A lithium ion secondary battery is disclosed having high output characteristics even at an extremely low temperature, for example, -30°				

and high output power even in a low charged state. A graphite-based material having an R value (IRD/IRG) which is the ratio of peak intensity (IRD) at 1,300 to 1,400 cm<sup>-1</sup> to peak intensity (IRG) at 1,580 to 1,620 cm<sup>-1</sup> measured in its Raman spectrum of 0.3 to 0.6 and an H value (IH(110)/IH(004)) which is the ratio of the peak height intensity (IH(110)) of the face (110) to the peak height intensity (IH(004)) of the face (004) in its X-ray diffraction of 0.5 to 2.0 or a C value which is the ratio of the peak integral intensity (IC(110)) of the face (110) to the peak integral intensity (IC(004)) of the face (004) of 0.4 to 1.50 is used as a neg.-electrode active material.

L3	ANSWER 69 OF 113	CAPLUS	COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:	2005:493821	CAPLUS <<LOGINID::20080630>>	
DOCUMENT NUMBER:	143:29509		
TITLE:	Process and reactor for preparation of cathode active material for lithium secondary battery		
INVENTOR(S):	Sun, Yang Kook; Lee, Myoung Hun; Kang, Yoon Jung; Kim, Gil Ho		
PATENT ASSIGNEE(S):	Hanyang Hak Won Co., Ltd., S. Korea		
SOURCE:	PCT Int. Appl., 32 pp.		
DOCUMENT TYPE:	Patent		
LANGUAGE:	English		
FAMILY ACC. NUM. COUNT:	1		
PATENT INFORMATION:			
PATENT NO.	KIND	DATE	APPLICATION NO.
-----	-----	-----	DATE
WO 2005053064	A1	20050609	WO 2004-KR2980
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG	20041117	
KR 2004007356	A	20040124	KR 2003-84702
CN 1886847	A	20061227	CN 2004-80034929
JP 2007512668	T	20070517	JP 2006-541026
US 20070111098	A1	20070517	US 2006-580890
PRIORITY APPLN. INFO.:			
TI	Process and reactor for preparation of cathode active material for lithium secondary battery	KR 2003-84702	A 20031126
IT	Secondary batteries	WO 2004-KR2980	W 20041117
IT	Battery cathodes	(process and reactor for preparation of cathode active material for lithium secondary battery)	
IT	Carbon black, uses	Fluoropolymers, uses	
RL: MOA (Modifier or additive use); USES (Uses)	(process and reactor for preparation of cathode active material for lithium secondary battery)		
IT	113066-89-0P, Cobalt lithium nickel oxide (Co0.2LiNi0.8O2)	128975-24-6P,	
	Lithium manganese nickel oxide LiMn0.5Ni0.5O2	193215-96-2P, Cobalt	

lithium manganese nickel oxide (Co<sub>0.2</sub>LiMn<sub>0.4</sub>Ni<sub>0.4</sub>O<sub>2</sub>) 346417-97-8P,  
 Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>)  
 837287-95-3P 852875-92-4P 852875-93-5P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (process and reactor for preparation of cathode active material for lithium  
 secondary battery)  
 IT 24937-79-9, Pvdf  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (process and reactor for preparation of cathode active material for lithium  
 secondary battery)

AB The invention relates to a cathode active material for a lithium secondary  
 battery and a process for preparing the same. In accordance with the  
 present invention, the cathode active material having a high packing d.  
 was designed and synthesized and thus provided is a cathode active  
 material for a lithium secondary battery exhibiting structural  
 stability such as improved characteristics for charge/discharge, service  
 life and high-rate and thermal stability, by modifying surface of the  
 electrode active material with amphoteric or basic compds. capable of  
 neutralizing acid produced around the cathode active material.  
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 70 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:493050 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 143:29495  
 TITLE: Cathode active mass for secondary lithium  
 battery, its manufacture, and the  
 battery  
 INVENTOR(S): Nakajima, Motoe; Inada, Fumi; Uchikawa, Akio  
 PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005150102	A	20050609	JP 2004-306421	20041021
PRIORITY APFLN. INFO.:			JP 2003-364436	A 20031024
TI	Cathode active mass for secondary lithium battery, its manufacture, and the battery			
IT	Battery cathodes (compns. and medium particle size of lithium transition metal oxides and their manufacture for secondary lithium battery cathodes)			
IT	787635-96-5P, Cobalt lithium manganese nickel oxide (Co <sub>0.3</sub> Li <sub>1</sub> .08Mn <sub>0.33</sub> Ni <sub>0.36</sub> O <sub>2</sub> ) 787635-97-6P, Cobalt lithium manganese nickel oxide (Co <sub>0.3</sub> Li <sub>1</sub> .08Mn <sub>0.3</sub> Ni <sub>0.4</sub> O <sub>2</sub> ) 787635-98-7P, Cobalt lithium manganese nickel oxide (Co <sub>0.2</sub> Li <sub>1</sub> .08Mn <sub>0.3</sub> Ni <sub>0.5</sub> O <sub>2</sub> ) 787635-99-8P 787636-00-4P 787636-01-5P, Aluminum lithium manganese nickel oxide (Al <sub>0.1</sub> Li <sub>1</sub> .08Mn <sub>0.3</sub> Ni <sub>0.6</sub> O <sub>2</sub> ) 852996-06-6P, Lithium manganese nickel oxide (Li <sub>1</sub> .08Mn <sub>0.3</sub> Ni <sub>0.7</sub> O <sub>2</sub> )			
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses) (compns. and medium particle size of lithium transition metal oxides and their manufacture for secondary lithium battery cathodes)				
AB	The Li intercalating Li containing multiple oxide cathode active mass has a D/D' ratio 1-2, where D and D' are the median diameter of the active mass measured by laser diffraction, when dispersed in a solvent, without and			

with the application of an ultrasound, resp. The oxide is preferably  $\text{Li}_{\alpha}\text{Mn}_x\text{Ni}_y\text{Zn}_z\text{O}_2$  [ $X = \text{Co}$  or  $\text{Al}$ ,  $1 \leq \alpha \leq 1.2$ ,  $x \leq 0.35$ ,  $0.35 \leq y \leq 1$ ,  $z \leq 0.65$ , and  $(x+y+z) = 1$ ]. The active mass is prepared by grinding, heat treating, classifying, and packing a sintered Li salt-transition metal oxide mixture in an atmospheric containing  $\leq 20$  g steam/m<sup>3</sup>.

L3 ANSWER 71 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:493043 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 143:29494  
 TITLE: Cathode active mass for secondary lithium battery, its manufacture, and the battery which uses the active mass  
 INVENTOR(S): Inada, Fumi; Nakajima, Motoe; Uchikawa, Akio  
 PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005150057	A	20050609	JP 2003-390194	20031120
JP 3991359	B2	20071017		
PRIORITY APPLN. INFO.: JP 2003-390194 20031120				
TI Cathode active mass for secondary lithium battery, its manufacture, and the battery which uses the active mass				
IT Battery cathodes (compsns. and manufacture of cathode active mass containing lithium transition metal composite oxides for secondary lithium batteries)				
IT Secondary batteries (lithium; compsns. and manufacture of cathode active mass containing lithium transition metal composite oxides for secondary lithium batteries)				
IT 193215-73-5P 853058-04-5P, Cobalt lithium manganese nickel oxide ( $\text{Co}_0.45\text{LiMn}_0.2\text{Ni}_0.35\text{O}_2$ ) 853058-05-6P, Cobalt lithium manganese nickel oxide ( $\text{Co}_0.3\text{Li}_1.1\text{Mn}_0.3\text{Ni}_0.402$ ) 853058-06-7P, Cobalt lithium manganese nickel oxide ( $\text{Co}_0.3\text{Li}_1.1\text{Mn}_0.2\text{Ni}_0.502$ )				
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses) (compsns. and manufacture of cathode active mass containing lithium transition metal composite oxides for secondary lithium batteries)				
AB The active mass is a layer crystal structured Li transition metal composite oxide: $\text{Li}_{\alpha}\text{Mn}_x\text{Ni}_y\text{Mn}_z\text{O}_2$ [ $M = \text{Co}$ and/or $\text{Al}$ ; $\alpha = 1-1.2$ ; $x = 0.2-0.5$ ; $y = 0.35-0.5$ ; $z = 0-0.45$ ; and $(x+y+z) = 1$ ]; where a supernatant from a mixture of the oxide dispersed in a pH 7.2-7.5 pure water at 5 time the weight of the power has a pH 10.0-12.0. The active mass is manufactured by wet mixing a transition metal compound with a Li compound at a specified ratio; drying the mixture; firing in air, a N atmospheric, or an O atm at 850-1100°; cracking; and heat treating in air, a N atmospheric, or an O atm at 400-700°. The battery has the above cathode active mass.				

L3 ANSWER 72 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:315697 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 142:358107  
 TITLE: Single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary

INVENTOR(S): Jordy, Christian; Audry, Claudette; Boeuvre,  
 Jean-pierre; Biensan, Philippe; Lecerf, Andre  
 PATENT ASSIGNEE(S): Saft, Fr.  
 SOURCE: Eur. Pat. Appl., 15 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1523052	A2	20050413	EP 2004-292397	20041008
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
FR 2860922	A1	20050415	FR 2003-11866	20031010
US 20050112466	A1	20050526	US 2004-960066	20041008
US 7285357	B2	20071023		
JP 2005150093	A	20050609	JP 2004-295689	20041008
PRIORITY APPLN. INFO.:			FR 2003-11866	A 20031010
TI Single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries				
IT Carbon black, uses				
RL: DEV (Device component use); USES (Uses) (anode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)				
IT Battery cathodes				
(single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)				
IT Fluoropolymers, uses				
RL: DEV (Device component use); USES (Uses) (single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)				
IT 848871-46-5, Cobalt lithium manganese nickel oxide (Co0.14Li1.07Mn0.39Ni0.39O2) 848871-50-1, Cobalt lithium manganese nickel oxide (Co0.13Li1.09Mn0.38Ni0.38O2) 848871-59-0				
RL: DEV (Device component use); USES (Uses) (aluminum-doped, cathode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)				
IT 7440-44-0, Carbon, uses				
RL: DEV (Device component use); USES (Uses) (anode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)				
IT 24937-79-9, Polyvinylidene difluoride				
RL: DEV (Device component use); USES (Uses) (battery separator; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)				
IT 848871-43-2, Cobalt lithium manganese nickel oxide (Co0.14Li1.07Mn0.28Ni0.502) 848871-54-5, Cobalt lithium manganese nickel oxide (Co0.13Li1.13Mn0.37Ni0.36O2) 848871-57-8, Cobalt lithium manganese nickel oxide (Co0.12Li1.17Mn0.35Ni0.35O2) 848871-63-6				
RL: DEV (Device component use); USES (Uses) (boron-doped, cathode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)				
IT 848871-61-4 848871-64-7 848871-67-0				
848871-70-5 848871-73-8				
RL: DEV (Device component use); USES (Uses)				

(cathode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)

- AB An electrochem. active, single-phase Li<sub>1-x</sub>M<sub>1-a</sub>b-M<sub>2</sub>M<sub>3</sub>)O<sub>2</sub>, in which a = 0.02-0.25, b <0.30, c <0.30; a + b + c <0.50; M<sub>2</sub> is selected from Mg and Zn; M<sub>3</sub> is selected from Al, B, and Ga; and M<sub>1</sub> = Ni<sub>1-x-y-z</sub>CoxMnyMz, in which M<sub>4</sub> is selected from Fe, Cu, Ti, Zr, V, Ga, and Si, and y = 0.10-0.55, x <0.70, z <0.30; 1-x-y-z >0.20; and b + c + z >0. The anodes are typically fabricated from carbon, carbon black, and glassy carbon.

L3 ANSWER 73 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:297579 CAPLUS <<LOGINID::20080630>>

DOCUMENT NUMBER: 142:376490

TITLE: Manufacture of lithium-nickel-cobalt-manganese-aluminum containing composite oxide for secondary lithium battery cathode

INVENTOR(S): Kazuhara, Manabu; Mihsara, Takuya; Yajima, Sumitomo; Ueda, Koichiro; Wakasugi, Yukimitsu

PATENT ASSIGNEE(S): Seimi Chemical Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent  
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005089225	A	20050407	JP 2003-323426	20030916
PRIORITY APPLN. INFO.:			JP 2003-323426	20030916
TI	Manufacture of lithium-nickel-cobalt-manganese-aluminum containing composite oxide for secondary lithium battery cathode			
IT	Secondary batteries (lithium; manufacture of Li-Ni-Co-Mn-Al composite oxides for secondary lithium battery cathodes)			
IT	Battery cathodes (manufacture of Li-Ni-Co-Mn-Al composite oxides for secondary lithium battery cathodes)			
IT	849413-16-7P 849413-17-8P RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses) (manufacture of Li-Ni-Co-Mn-Al composite oxides for secondary lithium battery cathodes)			
AB	The oxide, having a R-3m rhombohedral structure and being represented by: Li <sub>Nix</sub> Mn <sub>1-x-y</sub> CoyAl <sub>2z</sub> -qF <sub>q</sub> (p = 0.98-1.07; x = 0.3-0.5; y = 0.1-0.38; and 0 < z ≤ 0.05; and q = 0-0.05), is manufactured by dry-mixing Ni-Co-Mn composite oxyhydroxide aggregated particles with Li <sub>2</sub> CO <sub>3</sub> and an Al containing compound; and firing the mixture in an O containing atmospheric			

L3 ANSWER 74 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:182996 CAPLUS <<LOGINID::20080630>>

DOCUMENT NUMBER: 142:264407

TITLE: Cathode active mass powder for secondary lithium battery

INVENTOR(S): Suhara, Manabu; Mihsara, Takuya; Ueda, Koichiro; Wakasugi, Yukimitsu

PATENT ASSIGNEE(S): Seimi Chemical Co., Ltd., Japan  
SOURCE: PCT Int. Appl., 20 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005020354	A1	20050303	WO 2004-JP12015	20040820
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CN 1706058	A	20051207	CN 2004-80001420	20040820
US 20050271944	A1	20051208	US 2005-150451	20050613
US 7381498	B2	20080603		

PRIORITY APPLN. INFO.: JP 2003-208311 A 20030821  
 WO 2004-JP12015 A1 20040820

TI Cathode active mass powder for secondary lithium battery  
 IT Battery cathodes  
     (cathodes containing different compressive breaking strength lithium cobalt manganese nickel oxides for secondary lithium batteries)  
 IT 346417-97-8, Cobalt lithium manganese nickel oxide  
     (Co0.33LiMn0.33Ni0.33O2) 846020-47-1 846020-48-2 846020-49-3  
 RL: DEV (Device component; use); USES (Uses)  
     (cathodes containing different compressive breaking strength lithium cobalt manganese nickel oxides for secondary lithium batteries)  
 AB The title powder is formed by aggregating particles of a lithium composite oxide  $\text{Li}_{\text{p}}\text{Ni}_{\text{x}}\text{Co}_{\text{y}}\text{Mn}_{\text{z}}\text{Mq}_2-\text{aF}_\text{a}$  [M = transition metal element (excluding Ni, Co and Mn), Al, or alkaline earth metal element; p = 0.9-1.1; x = 0.2-0.8; y = 0-0.4; z = 0-0.5; (y+z) > 0; q = 0-0.05; (2-a) = 1.9-2.1; (x + y + z + q) = 1; and a = 0-0.02]; has an average particle diameter D50 3-15  $\mu\text{m}$ ; and contains a 1st granular powder having compressive breaking strength  $\geq 50$  MPa and a 2nd granular powder having compressive breaking strength  $< 40$  MPa in such an amount that the weight ratio of the 1st granular powder to the 2nd granular powder is 50-90:10-50.  
 REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 75 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:58090 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 142:138345  
 TITLE: Method of preparation of cathode active material for rechargeable lithium battery  
 INVENTOR(S): Jung, Hyun-sook; Kim, Geun-bae  
 PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd, S. Korea  
 SOURCE: U.S. Pat. Appl. Publ., 12 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050014065	A1	20050120	US 2004-892991	20040716

US 7226698 B2 20070605 KR 2005010131 A 20050127 KR 2003-49020 20030718  
 CN 1610154 A 20050427 CN 2004-10044544 20040512  
 JP 2005044801 A 20050217 JP 2004-211609 20040720  
 PRIORITY APPLN. INFO.: KR 2003-49020 A 20030718  
 TI Method of preparation of cathode active material for rechargeable lithium battery  
 IT Secondary batteries (lithium; method of preparation of cathode active material for rechargeable lithium battery)  
 IT Battery cathodes (method of preparation of cathode active material for rechargeable lithium battery)  
 IT Hydroxides (inorganic) Nitrates, processes Oxides (inorganic), processes Sulfates, processes  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process) (method of preparation of cathode active material for rechargeable lithium battery)  
 IT Carbonaceous materials (technological products) RL: DEV (Device component use); USES (Uses) (method of preparation of cathode active material for rechargeable lithium battery)  
 IT 546-89-4, Lithium acetate 1310-65-2, Lithium hydroxide 7790-69-4, Lithium nitrate 602297-52-9, Cobalt manganese nickel hydroxide (Co0.33Mn0.33Ni0.33(OH)2) 824957-53-1 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process) (method of preparation of cathode active material for rechargeable lithium battery)  
 IT 186298-17-9P 478037-17-1P 500912-67-4P, Cobalt lithium manganese nickel oxide (Co0.33Li1.05Mn0.33Ni0.33O2) 807655-17-0P, Cobalt lithium manganese nickel oxide (Co0.33Li1.15Mn0.33Ni0.33O2) 824957-50-8P 824957-51-9P 824957-52-0P 824957-55-3P RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (method of preparation of cathode active material for rechargeable lithium battery)  
 AB Disclosed is a pos. active material for a lithium rechargeable battery, a method of preparing the same, and a lithium rechargeable battery comprising the same. The pos. active material has an I(003)/I(004) intensity ratio of between 1.15 to 1 and 1.21 to 1 in an X-ray diffraction pattern using CuK $\alpha$  ray, wherein I(003)/I(004) is the X-ray diffraction intensity of the (003) plane divided by the X-ray diffraction intensity of the (004) plane. The compound is represented by the formula:  $LixNi<sub>y</sub>Co<sub>z</sub>Mn<sub>1-y-z</sub>Q<sub>0.02</sub>$  where  $x \geq 1.05$ ,  $0 < y < 0.35$ ,  $0 < z < 0.35$ ,  $X$  is Al, Mg, Sr, Ti or La, and  $0 \leq Q \leq 0.1$ .  
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 76 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:34087 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 142:117668  
 TITLE: Cathode material for secondary lithium battery and its manufacture  
 INVENTOR(S): Miyahara, Michihisa; Sawada, Shunji; Shiraishi, Yohei; Koizumi, Tomoyoshi  
 PATENT ASSIGNEE(S): Kureha Chemical Industry Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005011713	A	20050113	JP 2003-175351	20030619
PRIORITY APPLN. INFO.:			JP 2003-175351	20030619
TI	Cathode material for secondary lithium battery and its manufacture			
IT	Battery cathodes (compsn. and manufacture of lithium transition metal oxides with controlled HGI for secondary lithium battery cathodes)			
IT	1310-66-3P, Lithium hydroxide monohydrate 820959-05-5P, Cobalt lithium manganese nickel oxide (Co0.08LiMn0.05Ni0.87O2) 820959-06-6P, Cobalt lithium manganese nickel oxide (Co0.05LiMn0.12Ni0.83O2) 820959-07-7P, Cobalt lithium manganese nickel oxide (Co0.08LiMn0.02Ni0.89O2) 820959-08-8P 820959-09-9P			
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)				
	(compsn. and manufacture of lithium transition metal oxides with controlled HGI for secondary lithium battery cathodes)			
IT	10141-05-6, Cobalt nitrate 10377-66-9, Manganese nitrate 13138-45-9, Nickel nitrate			
RL: RCT (Reactant); RACT (Reactant or reagent)				
	(compsn. and manufacture of lithium transition metal oxides with controlled HGI for secondary lithium battery cathodes)			
AB	The cathode material is a Li transition metal composite oxide : LinixMnyM1-x-yO2 (M = Co, Fe, Cr, V, Ti, Si, Ca, In, B, Al, Ga, and/or Mg; x = 0.5-0.99; and y = 0-0.5) and has a Hardgrove grindability index 90-240. The oxide is manufactured by forming a slurry, comprising hydroxide based particles and a nitrate salt based aqueous solution phase, by mixing Ni(NO3)2 with Mn(NO3)2, an auxiliary metal nitrate aqueous solution (auxiliary metal = Co, Fe, Cr, V, Ti, Si, Ca, In, B, Al, Ga, and/or Mg), and a Li(OH) aqueous solution; spray drying the slurry at 150-500° to obtain granulates; and firing the granulates in an O containing atmospheric			

L3 ANSWER 77 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:1059702 CAPLUS <>LOGINID:20080630>>  
 DOCUMENT NUMBER: 142125916  
 TITLE: Lithium metal oxide cathodes for nonaqueous lithium batteries  
 INVENTOR(S): Whitfield, Pamela; Davidson, Isobel  
 PATENT ASSIGNEE(S): National Research Council of Canada, Can.  
 SOURCE: PCT Int. Appl., 32 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004107480	A2	20041209	WO 2004-CA770	20040527
WO 2004107480	A3	20051103		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, RU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,				

NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,  
 TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
 EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,  
 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
 SN, TD, TG  
 CA 2527207 A1 20041209 CA 2004-2527207 20040527  
 EP 1629553 A2 20060301 EP 2004-734982 20040527  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR  
 CN 1795574 A 20060628 CN 2004-80014805 20040527  
 JP 2007503102 T 20070215 JP 2006-529498 20040527  
 US 20070122703 A1 20070531 US 2005-558445 20051128  
 IN 2005KN02514 A 20061201 IN 2005-KN2514 20051207  
 PRIORITY APPLN. INFO.: US 2003-473476P P 20030528  
 WO 2004-CA770 W 20040527  
**TI** Lithium metal oxide cathodes for nonaqueous lithium batteries  
**IT** Battery cathodes  
 (lithium metal oxide cathodes for nonaq. lithium batteries)  
**IT** Secondary batteries  
 (lithium; lithium metal oxide cathodes for nonaq. lithium  
 batteries)  
**IT** 53027-29-5, Iron lithium manganese oxide 61179-01-9, Aluminum lithium  
 manganese oxide 133782-19-1, Lithium manganese vanadium oxide  
 138758-08-4, Lithium manganese phosphorus oxide 153327-00-5, Gallium  
 lithium manganese oxide 153327-05-0, Lithium manganese tin oxide  
 162684-16-4, Lithium manganese nickel oxide 175786-46-6, Lithium  
 magnesium manganese oxide 191538-04-2, Copper lithium manganese oxide  
 201534-12-5, Lithium manganese zirconium oxide 204450-96-4, Chromium  
 lithium manganese oxide 208394-04-1, Lithium manganese titanium oxide  
 208394-05-2, Lithium manganese molybdenum oxide 214536-41-1, Cobalt  
 lithium manganese oxide 245085-55-6, Calcium lithium manganese oxide  
 252568-43-7, Lithium manganese tungsten oxide 252568-44-8, Lithium  
 manganese silicon oxide 393802-01-2, Beryllium lithium manganese oxide  
 393802-06-7, Lithium manganese tantalum oxide  
 RL: DEV (Device component use); USES (Uses)  
 (lithium metal oxide cathodes for nonaq. lithium batteries)  
**IT** 101920-93-8P, Cobalt lithium nickel oxide (Co0.5LiNi0.502) 448897-00-5P,  
 Lithium manganese nickel oxide (Lil.2Mn0.4Ni0.402) 677027-33-7P, Cobalt  
 lithium manganese oxide (Co0.4Li1.2Mn0.402) 801287-08-1P, Cobalt lithium  
 manganese nickel oxide ((Co,Ni)0.4Li1.2Mn0.402) 801287-09-2P, Cobalt  
 lithium manganese nickel oxide (Co0.1Li1.2Mn0.4Ni0.302) 801287-10-5P,  
 Cobalt lithium manganese nickel oxide (Co0.2Li1.2Mn0.4Ni0.202)  
 801287-11-6P, Cobalt lithium manganese nickel oxide  
 (Co0.3Li1.2Mn0.4Ni0.102) 801287-13-8P, Cobalt lithium manganese nickel  
 oxide (Co0.26Li1.16Mn0.32Ni0.2602) 801287-16-1P 801287-18-3P,  
 Cobalt lithium manganese nickel oxide (Co0.3Li1.14Mn0.27Ni0.302)  
 801287-20-7P, Cobalt lithium manganese nickel oxide  
 (Co0.41Li1.06Mn0.12Ni0.4102) 801287-22-9P 801287-24-1P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (lithium metal oxide cathodes for nonaq. lithium batteries)  
**AB** A lithium metal oxide pos. electrode for a non-aqueous lithium cell or  
 battery is disclosed. The pos. electrode comprises a lithium  
 metal oxide having a layered structure and a general formula, after  
 in-situ or ex-situ oxidation, of  $\text{Li}_x\text{Mn}_y\text{M}_z\text{O}_2$  wherein  $0 \leq x \leq$   
 $0.20$ ,  $0 < y < 1$ , manganese is in the 4+ oxidation state, and M is one or more  
 the first row transition metals: Ti, V, Cr, Mn, Fe, Co, Ni or Cu, or other  
 specific other canons: Al, Mg, Mo, W, Ta, Si, Sn, Zr, Be, Ca, Ga, and P,  
 which have an appropriate ionic radii to be inserted in to the structure

without unduly disrupting it. Usage of the materials of the invention in lithium cells and batteries is disclosed. A process is disclosed for formation of materials of the invention.

L3 ANSWER 78 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 20041020204 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 142:9225  
TITLE: Nonaqueous electrolyte secondary battery and charge/discharge system thereof  
INVENTOR(S): Watanabe, Shoichiro; Nagayama, Masatoshi; Kuranaka, So  
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co. Ltd., Japan  
SOURCE: PCT Int. Appl., 37 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004102701	A1	20041125	WO 2004-JP6620	20040511
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2004342500	A	20041202	JP 2003-138849	20030516
CN 1735985	A	20060215	CN 2004-80011814	20040511
EP 1655793	A1	20060510	EP 2004-732213	20040511
R: DE, FR, GB				
US 20060194109	A1	20060831	US 2005-552920	20051011
KR 790270	B1	20080102	KR 2005-720899	20051103
PRIORITY APPLN. INFO.:			JP 2003-138849	A 20030516
			WO 2004-JP6620	W 20040511

TI Nonaqueous electrolyte secondary battery and charge/discharge system thereof  
IT Battery anodes  
(lithium secondary battery; graphite as anode active substance for)  
IT Battery cathodes  
(lithium secondary battery; lithium transition metal oxides as cathode active substances for)  
IT Secondary batteries  
(lithium; charging voltage limites for)  
IT 7782-42-5, Graphite, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(anode active substance for lithium secondary battery)  
IT 144419-56-7, Cobalt lithium magnesium oxide (Co0.95LiMg0.05O2)  
372491-83-3, Aluminum cobalt lithium magnesium oxide  
(Al0.01Co0.94LiMg0.05O2) 372492-00-7, Aluminum cobalt lithium magnesium oxide (Al0.01Co0.98LiMg0.01O2) 405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 405890-08-6, Aluminum lithium manganese nickel oxide (Al0.1LiMn0.45Ni0.45O2) 422520-44-3, Lithium manganese nickel titanium oxide (LiMn0.45Ni0.45Ti0.1O2) 477700-15-5, Cobalt lithium oxide (Co0.99LiO2) 478814-69-6, Aluminum cobalt lithium

magnesium oxide (Al<sub>0.05</sub>Co<sub>0.9</sub>LiMg<sub>0.05</sub>O<sub>2</sub>) 489431-33-6, Aluminum cobalt lithium oxide (Al<sub>0.01</sub>Co<sub>0.98</sub>LiO<sub>2</sub>) 709654-46-6 719276-54-7, Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.94</sub>Li<sub>1.01</sub>Mg<sub>0.05</sub>O<sub>2</sub>) 798575-07-2, Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.94</sub>Li<sub>1.02</sub>Mg<sub>0.05</sub>O<sub>2</sub>) 798575-08-3, Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.94</sub>Li<sub>1.03</sub>Mg<sub>0.05</sub>O<sub>2</sub>) 798575-10-7, Aluminum cobalt lithium magnesium oxide (Al<sub>0.05</sub>Co<sub>0.85</sub>LiMg<sub>0.10</sub>O<sub>2</sub>) 798575-11-8, Aluminum cobalt lithium magnesium oxide (Al<sub>0.02</sub>Co<sub>0.88</sub>LiMg<sub>0.10</sub>O<sub>2</sub>) 798575-12-9, Lithium magnesium manganese nickel oxide (LiMg<sub>0.1</sub>Mn<sub>0.45</sub>Ni<sub>0.45</sub>O<sub>2</sub>) 798575-13-0, Lithium manganese nickel strontium oxide (LiMn<sub>0.45</sub>Ni<sub>0.45</sub>Sr<sub>0.10</sub>O<sub>2</sub>)

RL: TEM (Technical or engineered material use); USES (Uses)  
(cathode active substance for lithium secondary battery)

AB The disclosed nonaq. electrolyte secondary comprises a pos. electrode composed of a pos. electrode mix layer, a neg. electrode composed of a neg. electrode mix layer, a separator or a lithium ion-conductive porous film interposed between the pos. electrode and the neg. electrode, and a lithium ion-conductive nonaq. electrolyte. The pos. electrode mix layer contains a pos. electrode active material composed of a lithium-transition metal composite oxide, and the lithium-transition metal composite oxide contains lithium, a transition metal and a metal other than the transition metal. The neg. electrode mix layer contains a neg. electrode active material composed of a carbon material. In the region where the pos. electrode mix layer and the neg. electrode mix layer face each other, the ratio (R: W<sub>p</sub>/W<sub>n</sub>) of the weight of the pos. electrode active material (W<sub>p</sub>) contained in the pos. electrode mix layer per unit area to the weight of the neg. electrode active material (W<sub>n</sub>) contained in the neg. electrode mix layer per unit area is 1.3-2.2. In the normal operation, the charging final voltage of this nonaq. electrolyte secondary battery is set at 4.25-4.5 V.

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 79 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2004:1019025 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 142:9190  
TITLE: Secondary nonaqueous electrolyte battery  
INVENTOR(S): Narioka, Yoshinori  
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004335223	A	20041125	JP 2003-128235	20030506
US 20050008563	A1	20050113	US 2004-838322	20040505
CN 1551387	A	20041201	CN 2004-10043369	20040508
PRIORITY APPLN. INFO.:			JP 2003-128235	A 20030506
TI Secondary nonaqueous electrolyte battery				
IT Battery cathodes (compns. and tap d. of hexagonal crystalline lithium nickel cobalt manganese aluminum oxide for secondary lithium battery cathodes)				
IT 798396-50-6 798396-59-5				
RL: DEV (Device component use); PRP (Properties); USES (Uses) (compns. and tap d. of hexagonal crystalline lithium nickel cobalt manganese aluminum oxide for secondary lithium battery cathodes)				
AB The battery uses Li <sub>a</sub> Ni <sub>b</sub> -c-dCobMncAld <sub>d</sub> (0.05 ≤ a				

$\leq 1.20$ ,  $0.05 \leq b \leq 0.35$ ,  $0.01 \leq c \leq 0.35$ ,  
 $0.01 \leq d \leq 0.15$ ) having hexagonal crystalline structure and tap d.  
1.6-3.0 g/mL for cathode active mass.

L3 ANSWER 80 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2004:974142 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 142:201370  
TITLE: Synthesis and Electrochemical Properties of  
Li[Ni1/3Co1/3Mn(1/3-x)Mgx]O2-yFy via Coprecipitation  
AUTHOR(S): Kim, G.-H.; Myung, S.-T.; Bang, H. J.; Prakash, Jai;  
Sun, Y.-K.  
CORPORATE SOURCE: Department of Chemical Engineering, Center for  
Information and Communication Materials, Hanyang  
University, Seoul, 133-791, S. Korea  
SOURCE: Electrochemical and Solid-State Letters (2004), 7(12),  
A477-A480  
CODEN: ESLEF6; ISSN: 1099-0062  
PUBLISHER: Electrochemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
TI Synthesis and Electrochemical Properties of Li[Ni1/3Co1/3Mn(1/3-x)Mgx]O2-  
yFy via Coprecipitation  
IT Coprecipitation  
(copptn. of Li[Ni1/3Co1/3Mn(1/3-x)Mgx]O2-yFy cathode material for  
lithium batteries)  
IT Secondary batteries  
(lithium; synthesis and electrochem. properties of Li[Ni1/3Co1/3Mn(1/3-  
x)Mgx]O2-yFy cathode material for lithium batteries)  
IT Battery cathodes  
(synthesis and electrochem. properties of Li[Ni1/3Co1/3Mn(1/3-x)Mgx]O2-  
yFy cathode material for lithium batteries)  
IT 346417-97-8P, Cobalt lithium manganese nickel oxide  
(Co0.33LiMn0.33Ni0.33O2) 837287-67-9P 837287-83-9P  
837287-95-3P  
RL: DEV (Device component use); PNU (Preparation, unclassified); PRP  
(Properties); PREP (Preparation); USES (Uses)  
(synthesis and electrochem. properties of Li[Ni1/3Co1/3Mn(1/3-x)Mgx]O2-  
yFy cathode material for lithium batteries)  
AB The mixed transition metal layered compound, Li[Ni1/3Co1/3Mn(1/3-x)Mgx]O2-  
yFy was synthesized via copptn. followed by high-temperature heat treatment.  
XRD showed that this material has a typical layered structure with R3m  
space group. Spherical morphol. was observed by SEM. Mg and F substitutions  
improved the phys. properties such as crystallinity, morphol., and tap d.  
The improved phys. characteristics enhanced the capacity, retention, and  
thermal stability, even for electrodes cycled between 2.8 and 4.6 V.  
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 81 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2004:935422 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 141:398204  
TITLE: Cathode active materials, their production method, and  
nonaqueous electrolyte lithium secondary  
batteries  
INVENTOR(S): Nakajima, Motoe; Inada, Fumi; Uchikawa, Akio  
PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004311427	A	20041104	JP 2004-86963	20040324
JP 2006318928	A	20061124	JP 2006-199630	20060721
JP 2006318929	A	20061124	JP 2006-199631	20060721

## PRIORITY APPLN. INFO.:

TI Cathode active materials, their production method, and nonaqueous electrolyte lithium secondary batteries

IT Battery cathodes  
(lithium battery; lithium manganate nickelate derivs. as cathode active substances for)

IT 787635-96-5P, Cobalt lithium manganese nickel oxide (Co0.3Li1.08Mn0.3Ni10.3602) 787635-97-6P, Cobalt lithium manganese nickel oxide (Co0.3Li1.08Mn0.3Ni10.402) 787635-98-7P, Cobalt lithium manganese nickel oxide (Co0.2Li1.08Mn0.3Ni10.502) 787635-99-8P 787636-00-4P 787636-01-5P, Aluminum lithium manganese nickel oxide (Al0.1Li1.08Mn0.3Ni10.602)

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(lithium secondary battery cathode active substance)

AB The disclosed cathode active material is a compound of the formula  $\text{Li}_a\text{Mn}_x\text{Ni}_y\text{Z}_z\text{O}_2$  ( $X = \text{Co}, \text{Al}; 1 \leq a \leq 1.2; 0.2 \leq x \leq 0.5; 0.35 \leq y \leq 0.8; 0 \leq z \leq 0.45; x + y + z = 1$ ) having lamellar structure, crystallite size (measured by Hall's method) of 400-800 Å, and packing degree, (tap d./theor. d.)X100, of ≤ 55%. The lithium secondary battery prepared with the cathode active materials shows good resistance toward internal resistivity changes.

L3 ANSWER 82 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:823603 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 141:334872

TITLE: Cathode active material for secondary nonaqueous lithium battery, its manufacture, and the battery which uses the active mass

INVENTOR(S): Inada, Fumi; Nakajima, Motoe; Uchikawa, Akio

PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004281253	A	20041007	JP 2003-71569	20030317

PRIORITY APPLN. INFO.: JP 2003-71569 20030317

TI Cathode active material for secondary nonaqueous lithium battery, its manufacture, and the battery which uses the active mass

IT Battery cathodes  
(compns. and manufacture of cathode active mass containing lithium transition

metal composite oxides for secondary lithium batteries)

IT Secondary batteries  
(lithium; compns. and manufacture of cathode active mass containing lithium transition metal composite oxides for secondary lithium batteries)

IT 176206-89-6P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.2Ni0.502)  
 193215-73-5P, Aluminum cobalt lithium manganese nickel oxide  
 (Al0.1Co0.2LiMn0.3Ni0.402) 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.402) 217309-43-8P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402) 769973-31-1P, Cobalt lithium manganese nickel oxide (Co0.5LiMn0.05Ni0.4502)  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
 (comps. and manufacture of cathode active mass containing lithium transition metal composite oxides for secondary lithium batteries)  
 AB The active mass is a layer crystal structured Li transition metal composite oxide:  $\text{Li}_{\alpha}\text{Mnx}\text{Ni}_y\text{MzO}_2$  [ $\text{M} = \text{Co}$  and/or  $\text{Al}$ ;  $\alpha = 1-1.2$ ;  $x = 0-0.65$ ;  $y = 0.35-1$ ;  $z = 0-0.65$ ; and  $(x+y+z) = 1$ ]; where the active mass has an initial charge-discharge efficiency  $\geq 70\%$  when using Li as an anode. The active mass is manufactured by wet mixing a Li compound with a transition metal compound; drying the mixture; firing in air, a N atmospheric, or an O atm at 850-1100°; cracking; and heat treating in air, a N atmospheric, or an O atm at 500-800°. The battery has the above cathode active mass.

L3 ANSWER 83 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:753539 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 141:280344  
 TITLE: Secondary lithium battery  
 INVENTOR(S): Kasai, Masahiro; Suzuki, Katsunori  
 PATENT ASSIGNEE(S): Shin-Kobe Electric Machinery Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004259511	A	20040916	JP 2003-47151	20030225
PRIORITY APPLN. INFO.: JP 2003-47151 20030225				
TI Secondary lithium battery				
IT Battery cathodes (mixts. of layered lithium transition metal oxide and spine type lithium manganese oxide for secondary lithium battery cathodes)				
IT 247565-42-0, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.4Ni0.402) 757974-77-9, Cobalt lithium manganese nickel oxide (Co0.34Li1.02Mn0.33Ni0.3302) 757974-78-0, Cobalt lithium manganese nickel oxide (Co0.5Li1.08Mn0.33Ni0.202) 757974-79-1 757974-80-4 757974-81-5, Aluminum lithium manganese oxide (Al10.08Li1.1Mn1.8202)				
RL: DEV (Device component use); USES (Uses) (mixts. of layered lithium transition metal oxide and spine type lithium manganese oxide for secondary lithium battery cathodes)				
AB The battery uses a cathode active mass containing a layer structured oxide containing Li, Co, Ni, and Mn and a spinel type oxide containing Li and Mn; where the layer structured oxide is $\geq 50\%$ of the total cathode active mass and the Ni content in the oxide is $\leq 50\text{mol\%}$ of all metals other than Li.				

L3 ANSWER 84 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:606608 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 141:159839  
 TITLE: Precursor material for secondary lithium  
 battery cathode material, the cathode  
 material, and their manufacture  
 INVENTOR(S): Kajiya, Yoshio; Tasaki, Hiroshi  
 PATENT ASSIGNEE(S): Nikko Materials Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 37 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004064180	A1	20040729	WO 2003-JP16416	20031222
W: CN, JP, KR, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
TW 279019	B	20070411	TW 2003-92135730	20031217
EP 1587156	A1	20051019	EP 2003-782865	20031222
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LT, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
CN 1735986	A	20060215	CN 2003-80108519	20031222
US 20060121350	A1	20060608	US 2005-541817	20050708
PRIORITY APPLN. INFO.:			JP 2003-1955	A 20030108
			WO 2003-JP16416	W 20031222

- TI Precursor material for secondary lithium battery cathode material, the cathode material, and their manufacture  
 IT Battery cathodes  
     (cathodes materials containing Li composite oxides with controlled impurities content for secondary lithium batteries)  
 IT Secondary batteries  
     (lithium; cathodes materials containing Li composite oxides with controlled impurities content for secondary lithium batteries)  
 IT 193215-50-8, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.3Ni0.6O2)  
 193215-53-1, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.5O2)  
 193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2):  
 346417-97-8, Cobalt lithium manganese nickel oxide  
 (Co0.33LiMn0.33Ni0.33O2) 728942-11-8  
 RL: DEV (Device component use); USES (Uses)  
     (cathodes materials containing Li composite oxides with controlled impurities content for secondary lithium batteries)  
 IT 7440-23-5, Sodium, miscellaneous 7704-34-9, Sulfur, miscellaneous  
 RL: MSC (Miscellaneous)  
     (cathodes materials containing Li composite oxides with controlled impurities content for secondary lithium batteries)  
 AB The precursor material is a carbonate: ACO<sub>3</sub> (A = Ni, Mn, and/or Co) and has Na and S (impurities) content limited to ≤100 ppm; and is manufactured by adding an aqueous solution, comprising a Ni chloride, a Mn chloride, and/or a Co chloride, into a LiCO<sub>3</sub> suspension to precipitate the carbonate.  
 The cathode material is a Li-A-D-O (A = Ni, Mn, and/or Co; D = Mg, Al, Ti, Cr, Fe, Cu, and/or Zr) based composite oxide and has the ratio of D to (A+D) [D/(A+D)] 0-0.1 and the content of Na and S (impurities) limited to ≤100 ppm; and is manufactured by adding a 1st aqueous solution, comprising a Ni chloride, a Mn chloride, and/or a Co chloride, or a mixture of the 1st aqueous

solution and a 2nd aqueous solution comprising a Mg chloride, a Al chloride, a Ti chloride, a Cr chloride, a Fe chloride, a Cu chloride and/or a Zr chloride, into a LiCO<sub>3</sub> suspension to precipitate a carbonate or the carbonate with a hydroxide; oxidation treating the precipitate to obtain an oxide; mixing the oxide with a Li source; and firing the mixture

L3 ANSWER 85 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2004:533748 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 141:74296  
TITLE: Nonaqueous electrolyte rechargeable battery  
INVENTOR(S): Nagayama, Masatoshi; Yoshizawa, Hiroshi  
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
SOURCE: U.S. Pat. Appl. Publ., 9 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040126661	A1	20040701	US 2003-730049	20031209
US 7255963	B2	20070814		
JP 2004207120	A	20040722	JP 2002-376664	20021226
JP 3844733	B2	20061115		
PRIORITY APPLN. INFO.:			JP 2002-376664	A 20021226
TI Nonaqueous electrolyte rechargeable battery				
IT Battery cathodes				
Secondary batteries (nonaq. electrolyte rechargeable battery)				
96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate 61179-01-9, Aluminum lithium manganese oxide 136479-37-3, Lithium magnesium manganese oxide LiMg0.2Mn1.8O4 142447-12-9, Cobalt lithiummanganese oxide Co0.95LiMn0.05O2 145896-60-2, Aluminum lithium manganese oxide Al0.2LiMn1.8O4 175786-46-6, Lithium magnesium manganese oxide 184092-89-5, Cobalt lithium titanium oxide Co0.95LiTi0.05O2 186298-17-9, Aluminum cobalt lithium manganese nickel oxide 193216-10-3, Aluminum cobalt lithium manganese nickel oxide Al0.1Co0.1LiMn0.4Ni0.402 347175-77-3, Aluminum Lithium magnesium manganese oxide 372491-83-3, Aluminum cobalt lithium magnesium oxide Al0.01Co0.94LiMg0.05O2 433969-25-6, Aluminum Cobalt lithium magnesium manganese nickel oxide 478037-17-1, Cobalt lithium magnesium manganese nickel oxide 642999-49-3, Aluminum cobalt lithium magnesium oxide 709654-46-6 709654-47-7, Aluminum cobalt lithium oxide (Al0.05Co0.9LiO2) 709654-48-8, Cobalt lithium magnesium manganese oxide (Co0.94LiMg0.05Mn0.01O2) 709654-49-9, Cobalt lithium magnesium titanium oxide (Co0.94LiMg0.05Ti0.01O2) 709654-50-2, Cobalt lithium manganese titanium oxide (Co0.95LiMn0.02Ti0.02O2) 709654-51-3, Aluminum cobalt lithium manganese oxide (Al0.02Co0.95LiMn0.02O2) RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte rechargeable battery)				
AB A nonaq. electrolyte rechargeable battery includes: (a) a pos. electrode capable of charging and discharging lithium; (b) a neg. electrode capable of charging and discharging lithium; (c) a separator or a lithium ion conductive layer interposed between the pos. electrode and the neg. electrode; and (d) a lithium ion conductive nonaq. electrolyte, wherein the pos. electrode contains a mixture of a first pos. electrode active material and a second pos. electrode active material, the first				

pos. electrode active material includes lithium oxide containing manganese, the lithium oxide further contains aluminum and/or magnesium, and the second pos. electrode active material includes  $\text{Li}_{x}\text{Co}_{1-y}\text{Mg}_{y}\text{Al}_{z}\text{O}_2$  where  $1 \leq x \leq 1.03$ ,  $0.005 \leq y \leq 0.1$  and  $0.001 \leq z \leq 0.02$ .

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 86 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2003:948005 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 140:29492  
TITLE: Lithium nickel mixed oxide cathode active materials, cathodes and their manufacture, nonaqueous electrolyte secondary batteries, and electric appliances  
INVENTOR(S): Kudo, Yoshihiro; Li, Guo-hua  
PATENT ASSIGNEE(S): Sony Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003346806	A	20031205	JP 2002-158087	20020530
PRIORITY APPLN. INFO.:			JP 2002-158087	20020530
TI	Lithium nickel mixed oxide cathode active materials, cathodes and their manufacture, nonaqueous electrolyte secondary batteries, and electric appliances			
IT	Fluoropolymers, uses RL: DEV (Device component use); USES (Uses) (binder; lithium nickel mixed oxide cathode active materials and their fabrication into cathodes with graphite and binders for preparation of nonaq. electrolyte secondary batteries)			
IT	Battery cathodes (lithium nickel mixed oxide cathode active materials and their fabrication into cathodes with graphite and binders for preparation of nonaq. electrolyte secondary batteries)			
IT	Secondary batteries (lithium; lithium nickel mixed oxide cathode active materials and their fabrication into cathodes with graphite and binders for preparation of nonaq. electrolyte secondary batteries)			
IT	24937-79-9, Poly(vinylidene fluoride) RL: DEV (Device component use); USES (Uses) (binder; lithium nickel mixed oxide cathode active materials and their fabrication into cathodes with graphite and binders for preparation of nonaq. electrolyte secondary batteries)			
IT	7782-42-5, Graphite, uses RL: DEV (Device component use); USES (Uses) (lithium nickel mixed oxide cathode active materials and their fabrication into cathodes with graphite and binders for preparation of nonaq. electrolyte secondary batteries)			
IT	524724-05-8P RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); PREP (Preparation); PROC (Process); USES (Uses) (lithium nickel mixed oxide cathode active materials and their fabrication into cathodes with graphite and binders for preparation of nonaq. electrolyte secondary batteries)			
AB	Cathode active materials having composition formula $\text{Li}_{x}\text{Ni}_{y}\text{Ml}_{1-y}\text{O}_2$ ( $1.5 > x \geq 1$ ; $0 < y < 1$ ; M = Mn, Co, Cr, Al, Mg, Ti, and/or B) and are			

characterized by the peak intensity of the radial structure function of O atom in the vicinity of Ni atom on full charge being 80-120% of the uncharged condition. Most preferably, the anode active material has composition formula  $\text{Li}_{1.3}\text{Mn}_{0.5}\text{Ni}_{0.2}\text{Co}_{0.2}\text{Al}_{10.102}$ . Cathodes, batteries, and elec. appliances including the said cathode active materials are also claimed. Cathodes are manufactured by application of a mixture of the said cathode active material, graphite, and binder on a cathode collector, followed by drying. The cathodes have excellent structural stability.

L3 ANSWER 87 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2003:892268 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 139:352736  
TITLE: Method of preparing cathode active material for a lithium secondary battery  
INVENTOR(S): Suh, Jun-won; Kweon, Ho-jin  
PATENT ASSIGNEE(S): S. Korea  
SOURCE: U.S. Pat. Appl. Publ., 17 pp.  
CODEN: USXXC0  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030211235	A1	20031113	US 2003-409160	20030409
KR 2003088247	A	20031119	KR 2002-26200	20020513
JP 2003331845	A	20031121	JP 2003-61859	20030307
CN 1458705	A	20031126	CN 2003-130675	20030508
PRIORITY APPLN. INFO.:			KR 2002-26200	A 20020513
TI	Method of preparing cathode active material for a lithium secondary battery			
IT	Secondary batteries (lithium; method of preparing cathode active material for lithium secondary battery)			
IT	Battery cathodes (method of preparing cathode active material for lithium secondary battery)			
IT	478696-34-3, Aluminum lithium manganese nickel oxide $\text{Al}_{0.01}\text{LiMn}_{1.5}\text{Ni}_{0.504}$			
RL:	DEV (Device component use); USES (Uses) (method of preparing cathode active material for lithium secondary battery)			
IT	154471-92-8P, Cobalt lithium borate oxide $\text{Co}_{0.9}\text{Li}(\text{B0}_3)_0.101.7$ 198213-59-1P, Aluminum cobalt lithium oxide $\text{Al}_{10.05}\text{Co}_{0.95}\text{LiO}_2$ 199923-74-5P, Aluminum cobalt lithium oxide $\text{Al}_{10.1}\text{Co}_{0.9}\text{LiO}_2$ 264152-06-9P, Cobalt lithium borate oxide $\text{CoLi}(\text{B0}_3)_0.101.7$ 381231-02-3P, Aluminum cobalt lithium oxide $\text{Al}_{0.07}\text{Co}_{0.93}\text{LiO}_2$ 489431-31-4P, Aluminum cobalt lithium oxide $\text{Al}_{0.01}\text{CoLiO}_2$ 619329-49-6P, Aluminum cobalt lithium oxide ( $\text{Al}_{0.05}\text{CoLiO}_2$ ) 619329-50-9P, Cobalt lithium borate oxide ( $\text{Co}_{0.93}\text{Li}(\text{B0}_3)_0.0701.79$ ) 619329-51-0P, Cobalt lithium borate oxide ( $\text{CoLi}(\text{B0}_3)_0.0501.85$ )			
RL:	DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (method of preparing cathode active material for lithium secondary battery)			
IT	619329-52-1, Aluminum cobalt lithium nickel oxide ( $\text{Al}_{0.01}\text{Co}_{0.1}\text{LiNi}_{0.902}$ ) 619329-53-2			
RL:	TEM (Technical or engineered material use); USES (Uses) (method of preparing cathode active material for lithium secondary battery)			

AB A process of manufacturing a pos. active material for a lithium secondary battery includes adding a metal source to a doping element-containing coating liquid to surface-treat the metal source, wherein the metal source is selected from the group consisting of cobalt, manganese, nickel, and combination thereof; drying the surface-treated metal source material to prepare a pos. active material precursor; mixing the pos. active material precursor with a lithium source; and subjecting the mixture to heat-treatment. Alternatively, the above drying step during preparation of the pos. active material precursor is substituted by preheat-treatment or drying followed by preheat-treatment.

L3 ANSWER 88 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2003:454666 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 139:24132  
 TITLE: Cathode active mass and secondary battery using the active mass  
 INVENTOR(S): Hosoya, Yosuke; Yamamoto, Yoshikatsu  
 PATENT ASSIGNEE(S): Sony Corporation, Japan  
 SOURCE: PCT Int. Appl., 37 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003049217	A1	20030612	WO 2002-JP12750	20021205
W: CN, KR, US RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR				
JP 2003173776	A	20030620	JP 2001-373266	20011206
EP 1453126	A1	20040901	EP 2002-783774	20021205
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, CY, TR, BG, CZ, EE, SK				
US 20040058244	A1	20040325	US 2003-470505	20030729
US 7374841	B2	20080520		
US 20080090151	A1	20080417	US 2007-872609	20071015
PRIORITY APPLN. INFO.:			JP 2001-373266	A 20011206
			WO 2002-JP12750	W 20021205
			US 2003-470505	A3 20030729
TI Cathode active mass and secondary battery using the active mass				
IT Battery cathodes (cathodes containing high stable and high conductive composite oxides for secondary lithium batteries)				
IT Secondary batteries (lithium; cathodes containing high stable and high conductive composite oxides for secondary lithium batteries)				
IT 193214-63-0, Aluminum cobalt lithium manganese nickel oxide (Al0.05Co0.25LiMn0.1Ni0.6O2) 193215-23-5, Aluminum cobalt lithium manganese nickel oxide (Al0.05Co0.25LiMn0.2Ni0.5O2) 193215-66-6, Aluminum lithium manganese nickel oxide (Al0.1LiMn0.3Ni0.6O2) 217309-43-8, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.4O2) 536977-37-4, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.25Ni0.45O2) 536977-38-5, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.45Ni0.25O2) 536977-39-6 536977-40-9, Iron lithium manganese nickel oxide (Fe0.2LiMn0.3Ni0.5O2) 536977-41-0, Chromium lithium manganese nickel oxide (Cr0.05LiMn0.3Ni0.65O2) 536977-42-1, Lithium manganese nickel vanadium oxide (LiMn0.3Ni0.65V0.05O2) 536977-43-2, Lithium manganese nickel titanium oxide (LiMn0.3Ni0.65Ti0.05O2) 536977-44-3, Lithium magnesium manganese nickel oxide (LiMg0.15Mn0.3Ni0.55O2) 536977-45-4,				

Gallium lithium manganese nickel oxide (Ga<sub>0.05</sub>LiMn<sub>0.3</sub>Ni<sub>0.65</sub>O<sub>2</sub>)  
 536977-46-5 536977-47-6 536977-48-7  
 536977-49-8 536977-50-1 536977-51-2  
 RL: DEV (Device component use); USES (Uses)  
 (cathodes containing high stable and high conductive composite oxides for secondary lithium batteries)

AB The cathode active mass (21) comprises a high stable composite oxide Li<sub>x</sub>Ni<sub>1-y-z</sub>MnyMizO<sub>2</sub> (M<sub>i</sub> is ≥1 element selected from groups 2-14; x = 0.9-1.1; y = 0.25-0.45; and z = 0.01-0.3) and a high conductive composite oxide Li<sub>s</sub>M<sub>II</sub><sub>1-t</sub>uM<sub>III</sub>I<sub>u</sub>O<sub>2</sub> (M<sub>II</sub> = Ni and/or Co; M<sub>III</sub> is ≥1 element selected from groups 2-14; 0.95 ≤ s < 1.1; t = 0.05-0.20 and u = 0.01-0.10). The battery has a cathode, containing the above active mass, an anode, containing a Li intercalating active mass, and a nonaqueous electrolyte solution.

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 89 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2003:377212 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 1381371760  
 TITLE: Cathode active mass and battery thereof  
 INVENTOR(S): Li, Guohua  
 PATENT ASSIGNEE(S): Sony Corporation, Japan  
 SOURCE: PCT Int. Appl., 45 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003041193	A1	20030515	WO 2002-JP11667	20021108
W: CA, CN, KR, RW: AT, BE, BG, LU, MC, NL,	US			
JP 2003151548	A	20030523	JP 2001-344224	20011109
JP 3873717	B2	20070124		
CA 2431948	A1	20030515	CA 2002-2431948	20021108
EP 1443575	A1	20040804	EP 2002-780051	20021108
R: AT, BE, CH, IE, FI, CY,	DE, DK, ES, FR, TR, BG, CZ, EE, TW 285975			
US 20040053133	B	20070821	TW 2002-91132910	20021108
PRIORITY APPLN. INFO.:	A1	20040318	US 2003-466014	20030709
			JP 2001-344224	A 20011109
			WO 2002-JP11667	W 20021108

TI Cathode active mass and battery thereof  
 IT Battery cathodes  
 (compns. of aluminum cobalt lithium manganese nickel oxide cathode active mass for batteries)  
 IT 524724-01-4 524724-03-6 524724-05-8  
 524724-07-0 524724-09-2, Aluminum lithium manganese nickel oxide (Al<sub>10</sub>.1Li<sub>1.3</sub>Mn<sub>0.5</sub>Ni<sub>0.4</sub>O<sub>2</sub>)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (compns. of aluminum cobalt lithium manganese nickel oxide cathode active mass for batteries)

AB The active mass is Li<sub>1</sub>Mn<sub>0.1</sub>Nib<sub>2</sub>Cob<sub>3</sub>Alc<sub>0.1</sub>, where 1.1 ≤ a ≤ 1.5, 0 < b<sub>1</sub>, 0 < b<sub>2</sub>, 0 < b<sub>3</sub>, 0 < c, 0.9 < (b<sub>1</sub>+b<sub>2</sub>+b<sub>3</sub>+c) < 1.1, a ≥ 1.1+(b<sub>1</sub>+b<sub>2</sub>+b<sub>3</sub>+c), and 1.8 < d < 2.5. The battery uses the active mass.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS

## RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 90 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2003:317544 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 138:306836  
 TITLE: A spinel lithium manganese composite oxide cathode active material for nonaqueous electrolyte lithium secondary battery  
 INVENTOR(S): Noguchi, Takehiro; Numata, Tatsushi  
 PATENT ASSIGNEE(S): NEC Corporation, Japan  
 SOURCE: Eur. Pat. Appl., 12 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1304752	A2	20030423	EP 2002-22886	20021014
EP 1304752	A3	20060412		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
JP 2003197194	A	20030711	JP 2002-293082	20021004
US 20030086863	A1	20030508	US 2002-270946	20021015
US 7026070	B2	20060411		
TW 564572	B	20031201	TW 2002-91123882	20021016
CN 1412872	A	20030423	CN 2002-148005	20021018
PRIORITY APFLN. INFO.:			JP 2001-320675	A 20011018
TI A spinel lithium manganese composite oxide cathode active material for nonaqueous electrolyte lithium secondary battery				
IT Secondary batteries (lithium; spinel lithium manganese composite oxide cathode active material for nonaq. electrolyte lithium secondary battery)				
IT Battery cathodes (spinel lithium manganese composite oxide cathode active material for nonaq. electrolyte lithium secondary battery)				
IT 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide (Li(OH)) 10377-48-7, Lithium sulfate 12057-24-8, Lithium oxide (Li <sub>2</sub> O), processes RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process) (spinel lithium manganese composite oxide cathode active material for nonaq. electrolyte lithium secondary battery)				
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (spinel lithium manganese composite oxide cathode active material for nonaq. electrolyte lithium secondary battery)				
IT 12031-75-3P, Lithium manganese nickel oxide LiMn1.5Ni0.5O4 123744-41-2P, Lithium manganese nickel titanium oxide LiMn1.2Ni0.5Ti0.3O4 288387-95-1P, Lithium manganese nickel titanium oxide LiMn1.45Ni0.5Ti0.05O4 508200-26-8P, Lithium manganese nickel titanium oxide (LiMn1.4Ni0.5Ti0.104) 508200-28-0P, Lithium manganese nickel titanium oxide (LiMn1.35Ni0.5Ti0.1504) 508200-30-4P, Lithium manganese nickel titanium oxide (LiMn1.3Ni0.5Ti0.204) 508200-32-6P, Lithium manganese nickel oxide silicate (LiMn1.3Ni0.5O3.2(SiO4)0.2) 508200-33-7P, Lithium manganese nickel oxide silicate (LiMn1.1Ni0.5O2.4(SiO4)0.4) 508200-34-8P 508200-35-9P 508200-36-0P, Cobalt lithium manganese nickel oxide (Co0.2LiMn1.4Ni0.4O4) 508200-37-1P 508200-38-2P, Cobalt lithium manganese nickel oxide (Co0.4LiMn1.3Ni0.3O4) 508200-39-3P 508200-40-6P, Iron lithium				

manganese nickel oxide (Fe0.2LiMn1.4Ni0.4O4) 508200-41-7P  
 508200-43-9P, Chromium lithium manganese nickel oxide  
 (Cr0.2LiMn1.4Ni0.4O4) 508200-44-OP 508200-45-1P, Copper lithium  
 manganese nickel oxide (Cu0.05LiMn1.5Ni0.45O4) 508200-46-2P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
     (spinel lithium manganese composite oxide cathode active material for  
     nonaq. electrolyte lithium secondary battery)

AB A pos. electrode active material for a secondary battery  
 contains a spinel lithium manganese composite oxide expressed by a general  
 formula of  $Lia(MxMn_{2-x}yA_y)O_4$  where  $x$ ,  $y$  and  $z$  are pos. values which  
 satisfy  $0.4 < x$ ,  $0 < y$ ,  $x+y < 2$ , and  $0 < z < 1.2$ ; "M" denotes Ni and at  
 least one metal element selected from the group consisting of Co, Fe, Cr  
 and Cu; "A" denotes at least one metal element selected from the group  
 consisting of Si and Ti. The ratio  $y$  of A has a value of  $0.1 < y$  in case  
 where A includes only Ti. Accordingly, it is possible to acquire a  
 material for the pos. electrode of a lithium ion secondary battery  
 , which has a high capacity and a high energy d. with a high voltage of  
 4.5 V or higher with respect to Li.

L3 ANSWER 91 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2003:222213 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 138:240689  
 TITLE: Method for preparation of battery active  
       material with excellent electrochemical  
       characteristics and thermal stability  
 INVENTOR(S): Kweon, Ho-Jin; Suh, Jun-Won; Yoon, Jang-Ho; Park,  
                   Jung-Joon  
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea  
 SOURCE: U.S. Pat. Appl. Publ., 25 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030054250	A1	20030320	US 2002-189384	20020708
US 7108944	B2	20060919		
KR 2003008704	A	20030129	KR 2001-43554	20010719
CN 1399363	A	20030226	CN 2002-2126435	20020719
JP 2003100296	A	20030404	JP 2002-210922	20020719
US 20060269659	A1	20061130	US 2006-498868	20060804

PRIORITY APPLN. INFO.: KR 2001-43554 A 20010719  
                           US 2002-189384 A3 20020708

TI Method for preparation of battery active material with excellent  
 electrochemical characteristics and thermal stability

IT Alkali metals, uses  
 Alkaline earth metals  
 Group IIIA elements  
 Group IVA elements

RL: TEM (Technical or engineered material use); USES (Uses)  
     (coating; method for preparation of battery active material with  
     excellent electrochem. characteristics and thermal stability)

IT Chalcogenides  
 Intercalation compounds  
 Oxides (inorganic), uses  
 RL: DEV (Device component use); USES (Uses)  
     (lithiated; method for preparation of battery active material with  
     excellent electrochem. characteristics and thermal stability)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 92 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2003:173992 CAPLUS <>LOGINID::20080630>>

DOCUMENT NUMBER: 138:224204  
 TITLE: Battery  
 INVENTOR(S): Adachi, Momoe; Fujita, Shigeru; Endo, Takuya;  
 Iwakoshi, Yasunobu; Shibamoto, Goro  
 PATENT ASSIGNEE(S): Sony Corporation, Japan  
 SOURCE: PCT Int. Appl., 162 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003019713	A1	20030306	WO 2002-JP8498	20020823
W: CN, JP, KR, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				
EP 1443584	A1	20040804	EP 2002-762828	20020823
R: AI, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR, BG, CZ, EE, SK				
CN 1557036	A	20041222	CN 2002-818384	20020823
CN 1770542	A	20060510	CN 2005-10113835	20020823
CN 1770543	A	20060510	CN 2005-10113836	20020823
US 20040234853	A1	20041125	US 2004-486635	20040211
PRIORITY APPLN. INFO.:			JP 2001-254547	A 20010824
			CN 2002-818384	A3 20020823
			WO 2002-JP8498	W 20020823

TI Battery  
 IT Secondary batteries  
   (lithium; secondary lithium batteries containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
 IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 12668-36-9  
 RL: DEV (Device component use); USES (Uses)  
   (anode; secondary lithium batteries containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
 IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 RL: DEV (Device component use); USES (Uses)  
   (cathode; secondary lithium batteries containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
 IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6 132843-44-8  
 RL: DEV (Device component use); USES (Uses)  
   (electrolyte; secondary lithium batteries containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
 IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate 12031-65-1, Lithium nickel oxide (LiNiO<sub>2</sub>) 113066-92-5, Cobalt lithium nickel oxide (Co<sub>0.9</sub>LiNi<sub>0.1</sub>O<sub>2</sub>) 118557-79-2, Cobalt iron lithium oxide (Co<sub>0.9</sub>Fe<sub>0.1</sub>LiO<sub>2</sub>) 128975-24-6, Lithium manganese nickel oxide (LiMn<sub>0.5</sub>Ni<sub>0.5</sub>O<sub>2</sub>) 185746-84-3, Aluminum lithium magnesium nickel oxide (Al<sub>0.05</sub>LiMn<sub>0.05</sub>Ni<sub>0.9</sub>O<sub>2</sub>) 202916-35-6, Chromium cobalt lithium nickel oxide (Cr<sub>0.05</sub>Co<sub>0.2</sub>LiNi<sub>0.75</sub>O<sub>2</sub>) 287718-97-2, Aluminum lithium manganese nickel oxide (Al<sub>0.05</sub>LiMn<sub>0.05</sub>Ni<sub>0.9</sub>O<sub>2</sub>) 346417-97-8, Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 364589-12-8, Aluminum cobalt lithium titanium oxide (Al<sub>0.05</sub>Co<sub>0.9</sub>LiTiO<sub>0.05</sub>O<sub>2</sub>) 475637-37-7,

Aluminum cobalt lithium nickel oxide (Al<sub>0.05</sub>Co<sub>0.8</sub>LiNiO<sub>1.502</sub>)  
478814-69-6, Aluminum cobalt lithium magnesium oxide  
(Al<sub>0.05</sub>Co<sub>0.9</sub>LiMgO<sub>0.0502</sub>) 500867-92-5, Cobalt lithium magnesium manganese oxide (Co<sub>0.8</sub>LiMgO<sub>0.05MnO<sub>1.502</sub></sub>) 500867-93-6, Aluminum iron lithium nickel oxide (Al<sub>0.15</sub>Fe<sub>0.05</sub>LiNiO<sub>0.802</sub>) 500867-94-7, Aluminum cobalt lithium nickel oxide (Al<sub>0.2</sub>Co<sub>0.3</sub>LiNiO<sub>1.502</sub>) 500867-98-1, Cobalt lithium magnesium nickel oxide (Co<sub>0.45</sub>LiMgO<sub>0.05NiO<sub>1.502</sub></sub>) 500867-99-2, Cobalt lithium nickel titanium oxide (Co<sub>0.35</sub>LiNiO<sub>0.6TiO<sub>0.0502</sub></sub>) 500868-00-8, Cobalt iron lithium nickel oxide (Co<sub>0.25</sub>Fe<sub>0.1</sub>LiNiO<sub>1.6502</sub>) 500868-01-9 500868-02-0  
500868-03-1 500868-04-2 500868-05-3  
500868-09-7 500868-10-0 500868-11-1 500868-12-2

RL: DEV (Device component use); USES (Uses)  
(secondary lithium batteries containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)

AB The battery has a cathode, containing a Li composite oxide active mass having Li and/or Ni and O, an anode containing a Li intercalating material and/or Li in its active mass, and an electrolyte-impregnated separator in between; where the battery has charging voltage ≥4.25 V, and a total amount of Li carbonate and Li sulfate is 1.0 mass % of the cathode active mass. Preferably, the electrolyte has the concentration of a proton impurity ≤20 ppm and water ≤20 ppm.

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 93 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2003:172058 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 138:224152  
TITLE: Lithium containing transition metal composite oxide and its manufacture  
INVENTOR(S): Suhara, Manabu; Mihara, Takuya; Fujie, Yoshinori  
PATENT ASSIGNEE(S): Seimi Chemical Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003068298	A	20030307	JP 2001-253916	20010824
PRIORITY APPLN. INFO.: JP 2001-253916 20010824				
TI Lithium containing transition metal composite oxide and its manufacture				
IT Battery cathodes (comps. and manufacture of lithium transition metal composite oxides for secondary lithium battery cathodes)				
IT 501124-48-7P 501124-49-8P 501124-50-1P 501124-51-2P 501124-52-3P				
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses) (comps. and manufacture of lithium transition metal composite oxides for secondary lithium battery cathodes)				
AB The oxide is represented by Li <sub>a</sub> Ni <sub>x</sub> CoyMn <sub>z</sub> M <sub>p</sub> O <sub>2</sub> (a = 1.0-1.2; 0.2≤ x<0.5; 0.2≤ y≤ 0.45; z = 0.2-0.5; p = 0.0005-0.05; x+y+z+p = 1; M = group IVB or VB metal). The oxide is prepared by firing a mixture of a Ni-Co-Mn coppdt. composite compound, a Li compound and a M compound at 800-1000° in a O containing atmospheric				

L3 ANSWER 94 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2003:75480 CAPLUS <>LOGINID::20080630>>

DOCUMENT NUMBER: 138:140039  
 TITLE: Cathode active mass and secondary nonaqueous electrolyte battery thereof  
 INVENTOR(S): Okabe, Kazuya; Shiosaki, Ryuji; Yufu, Hiroshi  
 PATENT ASSIGNEE(S): Yuasa Corporation, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003031219	A	200303131	JP 2001-213298	20010713
PRIORITY APPLN. INFO.:			JP 2001-213298	20010713
TI	Cathode active mass and secondary nonaqueous electrolyte battery thereof			
IT	Battery cathodes (compns. of cathode active mass containing Li composite oxides for secondary lithium batteries)			
IT	193215-92-8, Cobalt lithium manganese nickel oxide ( $Co_0.1LiMn_0.4Ni_0.5O_2$ ) 193215-96-2, Cobalt lithium manganese nickel oxide ( $Co_0.2LiMn_0.4Ni_0.4O_2$ ) 317831-74-6, Cobalt lithium manganese nickel oxide ( $Co_0.1LiMn_0.5Ni_0.4O_2$ ) 404904-11-6, Cobalt lithium manganese nickel oxide ( $Co_0.4LiMn_0.3Ni_0.3O_2$ ) 405890-05-3, Cobalt lithium manganese nickel oxide ( $Co_0.1LiMn_0.45Ni_0.45O_2$ ) 405890-05-3, Cobalt lithium manganese nickel oxide ( $Co_0.1LiMn_0.45Ni_0.45O_2$ ) 459408-91-4 459408-93-6 459408-94-7 459408-95-8 459408-97-0 493326-93-5, Cobalt lithium manganese nickel oxide ( $Co_0.3LiMn_0.34Ni_0.33O_2$ ) RL: DEV (Device component use); USES (Uses) (compns. of cathode active mass containing Li composite oxides for secondary lithium batteries)			
AB	The active mass comprises a Li composite oxide: $Li_{1+\alpha}[MnxNi_yCozMbo]O_2$ , where M = element excluding Mn, Ni, Co, and Li; $\alpha = 0-0.1$ , $-0.1 \leq x-y \leq 0.1$ ; $0 < z \leq 0.4$ ; and $x,y \geq 0.3$ .			

L3 ANSWER 95 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2002:964985 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 138:26944  
 TITLE: Gradient cathode material for lithium rechargeable batteries  
 INVENTOR(S): Lampe-Onnerud, Christina; Onnerud, Per; Shi, Jie;  
 Dalton, Sharon; Koizumi, Tomoyoshi; Nagai, Aisaku  
 PATENT ASSIGNEE(S): Kureha Chemical Industry Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 28 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20020192552	A1	20021219	US 2002-73674	20020211
US 6921609	B2	20050726		
US 20020192556	A1	20021219	US 2002-73678	20020211
US 6855461	B2	20050215		
TW 550844	B	20030901	TW 2002-91112811	20020612
WO 2002103823	A2	20021227	WO 2002-JP5896	20020613

WO 2002103823	A3	20040115		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
WO 2002103824	A2	20021227	WO 2002-JP5897	20020613
WO 2002103824	A3	20040422		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
AU 2002309278	A1	20030102	AU 2002-309278	20020613
AU 2002309279	A1	20030102	AU 2002-309279	20020613
EP 1405358	A2	20040407	EP 2002-736084	20020613
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
EP 1433213	A2	20040630	EP 2002-736085	20020613
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004531034	T	20041007	JP 2003-506028	20020613
JP 2004533104	T	20041028	JP 2003-506029	20020613
PRIORITY APPLN. INFO.:			US 2001-298791P	P 20010615
			US 2001-298798P	P 20010615
			US 2002-73674	A 20020211
			US 2002-73678	A 20020211
			WO 2002-JP5896	W 20020613
			WO 2002-JP5897	W 20020613

TI Gradient cathode material for lithium rechargeable batteries  
 IT Battery cathodes  
     (gradient cathode material for lithium rechargeable batteries  
     )  
 IT Carbon black, uses  
   RL: MOA (Modifier or additive use); USES (Uses)  
     (gradient cathode material for lithium rechargeable batteries  
     )  
 IT Secondary batteries  
     (lithium; gradient cathode material for lithium rechargeable  
     batteries)  
 IT 12190-79-3, Cobalt lithium oxide colio2 113066-89-0, Cobalt lithium  
   nickel oxide Co0.2LiNi0.8O2 131344-56-4, Cobalt lithium nickel oxide  
   207803-50-7, Aluminum Cobalt lithium magnesium nickel oxide 217309-42-7,  
   Copper lithium nickel oxide Cu0.2LiNi0.8O2 478037-16-0 478037-17-1  
   478037-18-2 478037-19-3, Cobalt lithium nickel borate oxide  
   (Co0.1Li1.1Ni0.87(BO3)0.03O1.91) 478037-20-6  
   RL: DEV (Device component use); USES (Uses)  
     (gradient cathode material for lithium rechargeable batteries  
     )  
 IT 174616-26-3P, Cobalt lithium nickel borate oxide  
   Co0.1LiNi0.87(BO3)0.03O1.91 179802-94-9P, Cobalt lithium manganese

nickel oxide Co0.05LiMn0.05Ni0.902 478037-21-7P  
478037-22-8P 478037-23-9P, Cobalt lithium manganese nickel oxide  
(Co0.05LiMn0.1Ni0.902)  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(gradient cathode material for lithium rechargeable batteries  
)

AB A composition suitable for use as a cathode material of a lithium battery includes a core material having an empirical formula  $\text{Li}_{x'}\text{M}'\text{yO}_2$ ; "x'" is equal to or greater than about 0.1 and equal to or less than about 1.3; "y" is greater than about 0.0 and equal to or less than about 0.5; and "z" is greater than about 0.0 and equal to or less than about 0.2. M' is at least one member of the group consisting of sodium, potassium, nickel, calcium, magnesium and strontium. M'' is at least one member of the group consisting of cobalt, iron, manganese, chromium, vanadium, titanium, magnesium, silicon, boron, aluminum and gallium. A coating on the core has a greater ratio of cobalt to nickel than the core. The coating and, optionally, the core can be a material having an empirical formula  $\text{Li}_{x''}\text{Ax}_2\text{Ni}_1\text{y}_1\text{z}_1\text{Co}_1\text{Bz}_1\text{O}_a$ ; "x''" is greater than about 0.1 and equal to or less than about 1.3; "x''", "y1" and "z1" each is greater than about 0.0 and equal to or less than about 0.2; "a" is greater than 1.5 and less than about 2.1; "A" is at least one element selected from the group consisting of barium, magnesium, calcium and strontium; and "B" is at least one element selected from the group consisting of boron, aluminum, gallium, manganese, titanium, vanadium and zirconium.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 96 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2002:946881 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 138:15281  
TITLE: Lithium ion battery passive charge equalization  
INVENTOR(S): Hall, John C.; Lackner, Anna M.  
PATENT ASSIGNEE(S): USA  
SOURCE: U.S. Pat. Appl. Publ., 8 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20020187372	A1	20021212	US 2001-855235	20010514
PRIORITY APPLN. INFO.:			US 2001-855235	20010514
TI	Lithium ion battery passive charge equalization			
IT	Schottky diodes (lithium ion battery passive charge equalization)			
IT	Fluoropolymers, uses (lithium ion battery passive charge equalization)			
IT	Secondary batteries (lithium; lithium ion battery passive charge equalization)			
IT	7429-90-5, Aluminum, uses 7440-44-0, Carbon, uses 7440-50-8, Copper, uses 12031-65-1, Lithium nickel oxide linio2 24937-79-9, Polyvinylidene fluoride 39300-70-4, Lithium nickel oxide 113066-89-0, Cobalt lithium nickel oxide coo.2lini0.8oz 131344-56-4, Cobalt lithium nickel oxide 152991-98-5, Aluminum lithium nickel oxide 172484-44-5, Aluminum lithium nickel oxide Al0.25LiNi0.75O2 177997-13-6, Aluminum			

cobalt lithium nickel oxide 179802-96-1, Cobalt lithium manganese nickel oxide Co<sub>0.2</sub>LiMnO<sub>1.1</sub>Ni<sub>0.7</sub>O<sub>2</sub> 182442-95-1, Cobalt lithium manganese nickel oxide 182442-96-2, Cobalt iron lithium nickel oxide 186298-17-9, Aluminum cobalt lithium manganese nickel oxide 193214-24-3, Aluminum cobalt lithium nickel oxide Al<sub>0.05</sub>Co<sub>0.15</sub>LiNi<sub>0.8</sub>O<sub>2</sub> 221689-64-1, Cobalt lithium magnesium nickel titanum oxide Co<sub>0.2</sub>LiMgO<sub>0.05</sub>Ni<sub>0.7</sub>TiO<sub>0.05</sub>O<sub>2</sub> 245437-21-2, Cobalt iron lithium nickel oxide Co<sub>0.2</sub>FeO<sub>1.1</sub>LiNi<sub>0.7</sub>O<sub>2</sub> 245511-77-7, Cobalt lithium nickel fluoride oxide 477561-13-0 477561-14-1, Cobalt lithium nickel fluoride oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>F<sub>0.05</sub>O<sub>1.95</sub>) 477561-15-2

RL: DEV (Device component use); USES (Uses)  
 (lithium ion battery passive charge equalization)

AB An electrochem. battery includes at least two elec.  
 interconnected electrochem. cells. Each electrochem. cell has an anode including carbon, and a cathode including a modified lithium metal oxide including at least one addnl. element selected from the group consisting of nickel, aluminum, magnesium, titanium, and combinations thereof. A Schottky diode is connected between the anode and the cathode. The battery is balanced by fully discharging it to a fully discharged state, and then operated in cycles of charging and discharging.

L3 ANSWER 97 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2002/716671 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 1371:235265  
 TITLE: Cathode active mass and secondary nonaqueous electrolyte battery thereof  
 INVENTOR(S): Okabe, Kazuya; Shiozaki, Ryuji; Fujii, Akihiro; Ito, Akinori; Yufu, Hiroshi  
 PATENT ASSIGNEE(S): Yuasa Corporation, Japan  
 SOURCE: PCT Int. Appl., 87 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002073718	A1	20020919	WO 2002-JP2284	20020312
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002237569	A1	20020924	AU 2002-237569	20020312
EP 1372202	A1	20031217	EP 2002-703970	20020312
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
TW 560098	B	20031101	TW 2002-91104740	20020313
PRIORITY APPLN. INFO.:			JP 2001-71486	A 20010314
			JP 2001-80430	A 20010321
			JP 2001-80434	A 20010321
			WO 2002-JP2284	W 20020312
TI Cathode active mass and secondary nonaqueous electrolyte battery thereof				
IT Battery cathodes (compns. and BET surface and x ray diffraction patterns of lithium				

manganese nickel oxide based cathode active mass for secondary lithium batteries)

IT 128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502)  
193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.402)  
405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.4502)  
459408-72-1, Lithium manganese nickel borate oxide  
(LiMn0.48Ni0.48(BO3)0.0501.85) 459408-73-2, Lithium manganese nickel vanadium oxide (LiMn0.48Ni0.48V0.0502) 459408-74-3, Aluminum lithium manganese nickel oxide (Al0.05LiMn0.48Ni0.48O2) 459408-75-4, Lithium magnesium manganese nickel oxide (LiMg0.05Mn0.48Ni0.48O2) 459408-76-5, Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.48O2)  
459408-77-6, Chromium lithium manganese nickel oxide  
(Cr0.05LiMn0.48Ni0.48O2) 459408-78-7, Lithium manganese nickel titanium oxide (LiMn0.48Ni0.48Ti0.0502) 459408-79-8, Iron lithium manganese nickel oxide (Fe0.05LiMn0.48Ni0.48O2) 459408-80-1, Copper lithium manganese nickel oxide (Cu0.05LiMn0.48Ni0.48O2) 459408-81-2, Lithium manganese nickel zinc oxide (LiMn0.48Ni0.48Zn0.0502) 459408-82-3, Lithium manganese nickel vanadium oxide (LiMn0.48Ni0.47V0.0502)  
459408-83-4, Aluminum lithium manganese nickel oxide  
(Al0.05LiMn0.48Ni0.47O2) 459408-84-5, Lithium magnesium manganese nickel oxide (LiMg0.05Mn0.48Ni0.47O2) 459408-85-6, Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.47O2) 459408-86-7, Chromium lithium manganese nickel oxide (Cr0.05LiMn0.48Ni0.47O2) 459408-87-8, Lithium manganese nickel titanium oxide (LiMn0.48Ni0.47Ti0.0502) 459408-88-9, Iron lithium manganese nickel oxide (Fe0.05LiMn0.48Ni0.47O2)  
459408-89-0, Copper lithium manganese nickel oxide  
(Cu0.05LiMn0.48Ni0.47O2) 459408-90-3, Lithium manganese nickel zinc oxide (LiMn0.48Ni0.47Zn0.0502) 459408-91-4 459408-92-5  
459408-93-6 459408-94-7 459408-95-8  
459408-96-9 459408-97-0 459408-98-1  
459408-99-2

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(compns. and BET surface and x ray diffraction patterns of lithium manganese nickel oxide based cathode active mass for secondary lithium batteries)

AB The Li Mn Ni oxide based cathode active mass has a BET surface 0.3-1.5 m<sup>2</sup>/g. Preferably, the oxide is LiMn0.5Ni0.502, where part of Mn and Ni may be replaced by Li, B, Mg, Al, Ti, V, Cr, Fe, Co, Cu, and/or Zn; and has a layered structure with specified peaks on its CuKa powder x ray diffraction pattern. The battery is a secondary Li battery.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 98 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2002:1638176 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 137:172442  
TITLE: Lithium metal oxide cathodes for nonaqueous lithium cells and batteries  
INVENTOR(S): Thackeray, Michael M.; Johnson, Christopher S.; Amine, Khalil; Kim, Jaekook  
PATENT ASSIGNEE(S): The University of Chicago, USA  
SOURCE: U.S. Pat. Appl. Publ., 21 pp., Cont.-in-part of U.S. Ser. No. 887,842.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20020114995	A1	20020822	US 2001-989844	20011121
US 6680143	B2	20040120	US 2001-887842	20010621
US 20020136954	A1	20020926	US 2003-688004	20031017
US 6677082	B2	20040113	US 2005-271462	20051110
US 20040081888	A1	20040429	US 2000-213618P	P 20000622
US 7135252	B2	20061114	US 2001-887842	A2 20010621
US 20060099508	A1	20060511	US 2001-989844	A3 20011121
PRIORITY APPLN. INFO.:			US 2003-688004	A2 20031017
TI	Lithium metal oxide cathodes for nonaqueous lithium cells and batteries			
IT	Battery cathodes (lithium metal oxide cathodes for nonaq. lithium cells and batteries)			
IT	Secondary batteries (lithium; lithium metal oxide cathodes for nonaq. lithium cells and batteries)			
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7439-93-2, Lithium, uses 21324-40-3, Lithium hexafluorophosphate			
	RL: DEV (Device component use); USES (Uses) (lithium metal oxide cathodes for nonaq. lithium cells and batteries)			
IT	448896-96-6P, Cobalt lithium manganese nickel oxide (Co0.15Li1.09Mn0.18Ni0.58O2) 448896-98-8P 448896-99-9P, Lithium manganese titanium oxide (Li1.07Mn0.79Ti0.14O2) 448897-00-5P, Lithium manganese nickel oxide (Li1.2Mn0.4Ni0.4O2) 448897-01-6P, Lithium manganese nickel oxide (Li1.27Mn0.6Ni0.13O2) 448897-02-7P, Lithium manganese nickel titanium oxide (Li1.02Mn0.46Ni0.46Ti0.05O2) RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (lithium metal oxide cathodes for nonaq. lithium cells and batteries)			
AB	A lithium metal oxide pos. electrode for a nonaq. lithium cell is disclosed. The cell is prepared in its initial discharged state and has a general formula $x\text{LiMO}_2.(1-x)\text{Li}_2\text{M}'\text{O}_3$ in which $0 < x < 1$ , and where M is one or more ion with an average trivalent oxidation state and with at least one ion being Mn or Ni, and where M' is one or more ion with an average tetravalent oxidation state. Complete cells or batteries are disclosed with anode, cathode and electrolyte as are batteries of several cells connected in parallel or series or both.			

L3 ANSWER 99 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2002:391431 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 136:372306  
 TITLE: Cathode active material for nonaqueous electrolyte secondary battery  
 INVENTOR(S): Naruoka, Yoshinori; Toriyama, Junichi; Terasaki, Masanao  
 PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 18 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1207575 A2 20020522 EP 2001-126790 20011109  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR  
 JP 2002151076 A 20020524 JP 2000-346973 20001114  
 US 20020086210 A1 20020704 US 2001-986431 20011108  
 US 6893776 B2 20050517  
 CN 1356737 A 20020703 CN 2001-134921 20011114  
 JP 2000-346973 A 20001114  
 PRIORITY APPLN. INFO.:  
 TI Cathode active material for nonaqueous electrolyte secondary  
 battery  
 IT Battery cathodes  
 Particle size  
 Secondary batteries  
 Surface area  
     (cathode active material for nonaq. electrolyte secondary  
     battery)  
 IT Carbon black, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
     (cathode active material for nonaq. electrolyte secondary  
     battery)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3,  
 Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
     (cathode active material for nonaq. electrolyte secondary  
     battery)  
 IT 193215-08-6P, Cobalt lithium manganese nickel oxide Co0.25LiMn0.2Ni0.55O2  
 193215-51-9P, Cobalt lithium manganese nickel oxide Co0.15LiMn0.3Ni0.55O2  
 247565-51-1P, Cobalt lithium manganese nickel oxide  
 Co0.15Li1.05Mn0.3Ni0.55O2 424823-63-2P, Cobalt lithium manganese nickel  
 oxide (Co0.09LiMn0.18Ni0.73O2) 424823-64-3P, Cobalt lithium manganese  
 nickel oxide (Co0.21LiMn0.18Ni0.62O2) 424823-65-4P, Cobalt lithium  
 manganese nickel oxide (Co0.3LiMn0.19Ni0.51O2) 424823-66-5P, Cobalt  
 lithium manganese nickel oxide (Co0.09LiMn0.29Ni0.62O2) 424823-67-6P,  
 Cobalt lithium manganese nickel oxide (Co0.2LiMn0.29Ni0.51O2)  
 424823-68-7P, Cobalt lithium manganese nickel oxide  
 (Co0.15Li1.02Mn0.3Ni0.55O2) 424823-69-8P, Cobalt lithium manganese  
 nickel oxide (Co0.14Li1.04Mn0.31Ni0.55O2) 424823-70-1P, Cobalt lithium  
 manganese nickel oxide (Co0.16Li1.07Mn0.29Ni0.55O2) 424823-71-2P, Cobalt  
 lithium manganese nickel oxide (Co0.15Li1.08Mn0.3Ni0.55O2) 424823-72-3P,  
 Cobalt lithium manganese nickel oxide (Co0.05Li1.09Mn0.15Ni0.80Z)  
 424823-73-4P, Cobalt lithium manganese nickel oxide  
 (Co0.05Li1.08Mn0.25Ni0.70Z) 424823-74-5P, Cobalt lithium manganese  
 nickel oxide (Co0.35Li1.04Mn0.15Ni0.50Z) 424823-75-6P, Cobalt lithium  
 manganese nickel oxide (Co0.25Li1.03Mn0.15Ni0.60Z) 424823-76-7P, Cobalt  
 lithium manganese nickel oxide (Co0.15Li1.02Mn0.35Ni0.50Z) 424823-77-8P,  
 Cobalt lithium manganese nickel oxide (Co0.1Li1.06Mn0.15Ni0.75O2)  
 424823-78-9P, Cobalt lithium manganese nickel oxide  
 (Co0.2Li1.05Mn0.35Ni0.45O2) 424823-79-0P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
     (cathode active material for nonaq. electrolyte secondary  
     battery)  
 AB A pos. active material for the nonaq. electrolyte secondary  
 battery comprises a lithium-nickel composite oxide represented by  
 the compositional formula  $LiaNi_{1-b-c}Co_bMn_cO_2$  ( $a \leq 1.09$ ,  $0.05 \leq b \leq 0.35$ ,  $0.15 \leq c \leq 0.35$ , and  $0.25 \leq b+c \leq 0.55$ ). By the X-ray diffractometry with the CuK $\alpha$  ray,  
 the lithium-nickel composite oxide exhibits an intensity ratio  $R$  (I012 &  
 I006/I11) of not greater 0.50, wherein  $R$  is the ratio of the sum of the  
 diffraction peak intensity I012 on the 012 plane and the diffraction peak  
 intensity I006 on the 006 plane to the diffraction peak intensity I101 on

the 101 plane. The crystallinity of the pos. active material of the compositional formula Li<sub>x</sub>Ni<sub>1-x</sub>-<sub>b</sub>-<sub>c</sub>CobMnC<sub>2</sub> can be kept high and it is possible to secure the good capacity d. and cycle life performance.

L3 ANSWER 100 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2002:193286 CAPLUS <<LOGINID::20080630>>  
DOCUMENT NUMBER: 136.234679  
TITLE: High-capacity secondary lithium ion batteries  
INVENTOR(S): Kurabayashi, Isao  
PATENT ASSIGNEE(S): K.E.E. Y. K., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002075369	A	20020315	JP 2000-308407	20000904
PRIORITY APPLN. INFO.:			JP 2000-308407	20000904
TI	High-capacity secondary lithium ion batteries			
IT	Carbonaceous materials (technological products)			
	Coke			
	RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)			
	(anode; high-capacity secondary lithium ion batteries using improved mixed oxide cathodes)			
IT	Carbon fibers, uses			
	RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)			
	(graphite, Melblon Milled FM 14, anode; high-capacity secondary lithium ion batteries using improved mixed oxide cathodes)			
IT	Battery anodes			
	Battery cathodes			
	Battery electrolytes			
	Safety			
	Secondary battery separators			
	(high-capacity secondary lithium ion batteries using improved mixed oxide cathodes)			
IT	Secondary batteries			
	(lithium; high-capacity secondary lithium ion batteries using improved mixed oxide cathodes)			
IT	Paper			
	(separator support; high-capacity secondary lithium ion batteries using improved mixed oxide cathodes)			
IT	7782-42-5, Graphite, uses 394709-68-3, GDA 2K			
	RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)			
	(anode; high-capacity secondary lithium ion batteries using improved mixed oxide cathodes)			
IT	96-48-0, $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate			
	RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)			
	(electrolyte solution; high-capacity secondary lithium ion batteries using improved mixed oxide cathodes)			
IT	14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate			
	RL: DEV (Device component use); TEM (Technical or engineered material			

- use); USES (Uses)  
     (electrolyte; high-capacity secondary lithium ion batteries  
     using improved mixed oxide cathodes)
- IT 204199-29-1, Cobalt lithium manganese oxide (Co0.05Li1.05Mn1.95O4)  
 394671-68-2, Cobalt lithium manganese oxide (Co0.05Li1.04Mn1.95O4)  
 394679-88-0 403671-95-4 403671-96-5
- RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
     (high-capacity secondary lithium ion batteries using improved mixed oxide cathodes)
- IT 54675-89-7, Propylene-tetrafluoroethylene-vinylidene fluoride copolymer
- RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
     (paper-supported microporous membrane separator; high-capacity secondary lithium ion batteries using improved mixed oxide cathodes)
- AB The batteries contain a cathode containing mixts. of 5-80 weight% LiaCobAlcNidMn(2-b-c-d)O4 (a = 1.03-1.06, b = 0.005-0.075, c = 0-0.05, d = 0-0.05) and 20-95 weight% LiaMnbAlcCodNi(1-b-c-d)O2 (a = 1.00-1.02, b = 0.15-0.225, c = 0-0.10, d = 0.005-0.075) as active materials, an anode containing carbonaceous active materials, and a separator. Preferably, the separator is a fine cellulosic fiber paper-supported microporous membrane of propylene-vinylidene fluoride-tetrafluoroethylene copolymer impregnated with specific electrolyte solns. The batteries show high tolerance to overcharge, high capacity, and long cycle life.
- L3 ANSWER 101 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESION NUMBER: 2002:104873 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 136:153889  
 TITLE: High-capacity secondary nonaqueous battery  
       with cathode containing plural metal mixed oxides  
 INVENTOR(S): Kurabayashi, Isao  
 PATENT ASSIGNEE(S): K.E.E. Y. K., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:
- | PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| JP 2002042816          | A    | 20020208 | JP 2000-256443  | 20000725 |
| PRIORITY APPLN. INFO.: |      |          | JP 2000-256443  | 20000725 |
- TI High-capacity secondary nonaqueous battery with cathode containing plural metal mixed oxides
- IT Battery cathodes  
     (cathode containing spinel-structure Mn compound, Li nickelate, and Li cobaltate for secondary battery)
- IT Carbon fibers, uses  
     (RL: DEV (Device component use); USES (Uses)  
     (graphite, Melblon Milled FM 14, anode; cathode containing spinel-structure Mn compound, Li nickelate, and Li cobaltate for secondary battery  
     ))
- IT Secondary batteries  
     (lithium; cathode containing spinel-structure Mn compound, Li nickelate, and Li cobaltate for secondary battery)
- IT 7782-42-5, Graphite, uses 394709-68-3, GDA 2K  
     (RL: DEV (Device component use); USES (Uses)  
     (anode; cathode containing spinel-structure Mn compound, Li nickelate, and Li

- cobaltate for secondary battery)
- IT 160152-00-1, Cobalt lithium oxide (CoLi<sub>1</sub>.0102) 394671-68-2, Cobalt lithium manganese oxide (Co<sub>0</sub>.05Li<sub>1</sub>.04Mn<sub>1</sub>.9504) 394679-88-0  
 394680-06-9, Cobalt lithium manganese oxide (Co<sub>0</sub>.05Li<sub>1</sub>.04Mn<sub>1</sub>.9304)  
 394680-11-6 394680-14-9 394680-17-2, Cobalt lithium nickel oxide (Co<sub>0</sub>.8Li<sub>1</sub>.01Ni<sub>0</sub>.202) 394680-21-8  
 394680-24-1 394680-27-4  
 RL: DEV (Device component use); USES (Uses)  
 (cathode containing spinel-structure Mn compound, Li nickelate, and Li cobaltate for secondary battery)
- AB The title battery is equipped with a carbonaceous anode and a cathode containing (A) spinel-structure Mn compound  $\text{Li}_{\text{a}}\text{Co}_{\text{b}}\text{Al}_{\text{c}}\text{Ni}_{\text{d}}\text{Mn}_{(2-\text{b}-\text{c}-\text{d})}\text{O}_4$
- (a)  $a = 1.03-1.06; b = 0.015-0.05; c = 0-0.05; d = 0-0.05$  10-70, (B) modified Li nickelate  $\text{Li}_{\text{a}}\text{Mn}_{\text{b}}\text{Al}_{\text{c}}\text{Co}_{\text{d}}\text{Ni}_{(1-\text{b}-\text{c}-\text{d})}\text{O}_2$  ( $a = 1.00-1.02; b = 0.15-0.225; c = 0-0.10; d = 0.01-0.075$ ) 5-85, and (C) modified Li cobaltate  $\text{Li}_{\text{a}}\text{Mn}_{\text{b}}\text{Fe}_{\text{c}}\text{Al}_{\text{d}}\text{Ni}_{\text{e}}\text{Co}_{(1-\text{b}-\text{c}-\text{d}-\text{e})}\text{O}_2$  ( $a = 1.00-1.03; b = 0.00005-0.01; c = 0.00005-0.009; d = 0-0.01; e = 0-0.3$ ) 5-85%. The battery has high thermal stability and overcharging resistance.

L3 ANSWER 102 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2002:98450 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 136:169901  
 TITLE: Modified lithium nickelate and manufacture thereof  
 INVENTOR(S): Kuribayashi, Isao  
 PATENT ASSIGNEE(S): K.E.E. Y. K., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002037631	A	20020206	JP 2000-256445	20000725
PRIORITY APPLN. INFO.:			JP 2000-256445	20000725
TI Modified lithium nickelate and manufacture thereof				
IT Secondary batteries (lithium; modified lithium nickelate for Li-ion secondary battery pos. electrode active substance)				
IT Heat treatment (manufacture of modified lithium nickelate for Li-ion secondary battery pos. electrode active substance)				
IT 397329-98-5 397329-99-6 397330-00-6 397330-01-7 397330-03-9 397330-04-0 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (modified lithium nickelate for Li-ion secondary battery pos. electrode active substance)				
AB The invention relates to a novel modified lithium nickelate used as a pos. electrode active substance of a Li-ion secondary battery having high capacity and long lifetime. The modified lithium nickelate is represented by $\text{Li}_{\text{a}}\text{Mn}_{\text{b}}\text{Al}_{\text{c}}\text{Co}_{\text{d}}\text{Ni}_{(1-\text{b}-\text{c}-\text{d})}\text{O}_4$ ( $1.00 \leq \text{c} \leq 1.02,$ $0.15 \leq \text{b} \leq 0.225, 0 \leq \text{a} \leq 0.05,$ $0.01 \leq \text{d} \leq 0.075$ ). The process comprises the steps of (1) heating a mixture containing a Ni compound, an organic Mn salt, an Al compound, and a Co compound, (2) crushing, and then adding a Li compound, (3) heating in an O <sub>2</sub> atmospheric, (4) cooling, and then crushing, (5) heating at 700-900° in an				

O2 atmospheric, and further heating at 850–900°.

L3 ANSWER 103 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2001:489781 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 135:79487  
TITLE: Nickel-rich and manganese-rich quaternary metal oxide  
materials as cathodes for lithium-ion and lithium-ion  
polymer batteries  
INVENTOR(S): Yang, Kaiyuan; Agarwal, Naveen; Kim, Jaeho; McGrath,  
Kevin P.  
PATENT ASSIGNEE(S): Kimberly-Clark Worldwide, Inc., USA  
SOURCE: PCT Int. Appl., 62 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001048842	A1	20010705	WO 2000-US35418	20001222
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 20020006550	A1	20020117	US 2000-742738	20001221
US 6350543	B2	20020226		
US 20020119374	A1	20020829	US 2000-742754	20001221
US 6623886	B2	20030923		
CA 2394146	A1	20010705	CA 2000-2394146	20001222
AU 2001024605	A	20010709	AU 2001-24605	20001222
EP 1247303	A1	20021009	EP 2000-988392	20001222
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
CN 1307374	A	20010808	CN 2000-137636	20001228
TW 523958	B	20030311	TW 2000-89128101	20010328
IN 2002CN00974	A	20051028	IN 2002-CN574	20020624
MX 2002PA06464	A	20021129	MX 2002-PA6464	20020627
KR 767614	B1	20071018	KR 2002-708441	20020628
US 20030206852	A1	20031106	US 2003-456106	20030606
US 7258821	B2	20070821		

PRIORITY APPLN. INFO.: US 1999-179911P P 19991229  
US 2000-742738 A 20001221  
US 2000-742754 A 20001221  
WO 2000-US35418 W 20001222

TI Nickel-rich and manganese-rich quaternary metal oxide materials as  
cathodes for lithium-ion and lithium-ion polymer batteries

IT Secondary batteries  
(lithium; nickel-rich and manganese-rich quaternary metal oxide  
materials as cathodes for lithium-ion and lithium-ion polymer  
batteries)

IT Battery cathodes  
(nickel-rich and manganese-rich quaternary metal oxide materials as  
cathodes for lithium-ion and lithium-ion polymer batteries)

IT 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses  
RL: DEV (Device component use); USES (Uses)

(nickel-rich and manganese-rich quaternary metal oxide materials as cathodes for lithium-ion and lithium-ion polymer batteries)

IT 346705-97-3P 346705-98-4P 346705-99-5P  
 346706-00-1P 346706-01-2P 346706-02-3P  
 346706-03-4P 346706-44-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(nickel-rich and manganese-rich quaternary metal oxide materials as cathodes for lithium-ion and lithium-ion polymer batteries)

IT 546-89-4, Lithium acetate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1310-66-3, Lithium hydroxide monohydrate 1310-73-2, Sodium hydroxide, reactions 7447-41-8, Lithium chloride, reactions 7789-24-4, Lithium fluoride, reactions 7790-69-4, Lithium nitrate 10141-05-6, Cobalt nitrate 10377-48-7, Lithium sulfate 10377-51-2, Lithium iodide 10377-52-3, Lithium phosphate 10377-66-9, Manganese nitrate 13138-45-9, Nickel nitrate 13473-90-0, Aluminum nitrate RL: RCT (Reactant); RACT (Reactant or reagent)

(nickel-rich and manganese-rich quaternary metal oxide materials as cathodes for lithium-ion and lithium-ion polymer batteries)

AB Pos. electrode-active materials for use in lithium-ion and lithium-ion polymer batteries contain quaternary composite oxides of manganese, nickel, cobalt and aluminum where one of the four is present at levels of >70 mol%; for example,  $\text{Li}_{x}\text{Mn}_{0.2}\text{Ni}_{0.2}\text{Co}_{0.05}\text{Al}_{0.05}\text{O}_n$ . The composite oxides can be lithiated to form pos. electrode-active materials that are stable over at least ten charge/discharge cycles at voltage levels over 4.8 V, and have capacities of over 200 mAh/g. Methods for producing the materials and electrochem. cells and batteries that include the materials are also provided.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 104 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2001:388985 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 135:7767

TITLE: Cathode active material for secondary lithium battery, and its use in the battery

INVENTOR(S): Ota, Satoshi; Hayashi, Koji; Yamato, Koji; Kobayashi, Koji; Yugamidani, Makoto; Kitamura, Hajime; Miyashita, Takahiro

PATENT ASSIGNEE(S): Chuo Denki Kogyo Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.  
 CODEN: JKXXAF

DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001148249	A	20010529	JP 1999-330095	19991119
PRIORITY APPLN. INFO.:			JP 1999-330095	19991119
TI Cathode active material for secondary lithium battery, and its use in the battery				
IT Battery cathodes				
			(Li Ni Mn Co oxide cathode for Li battery with high energy d. and high-temperature cycle performance)	
IT Secondary batteries			(lithium; Li Ni Mn Co oxide cathode for Li battery with high energy d. and high-temperature cycle performance)	
IT 341030-32-8P, Lithium manganese nickel oxide ( $\text{Li}_{1.03}\text{Mn}_{0.75}\text{Ni}_{0.25}\text{O}_4$ )				

341030-34-0P, Cobalt lithium manganese nickel oxide  
(Co0.2Li1.03Mn0.6Ni0.204) 341030-36-2P, Cobalt lithium manganese nickel oxide (Co0.05Li1.03Mn0.71Ni0.2404) 341030-38-4P, Cobalt lithium manganese nickel oxide (Co0.15Li1.03Mn0.64Ni0.2104) 341030-40-8P, Cobalt lithium manganese nickel oxide (Co0.3Li1.03Mn0.53Ni0.1704) 341030-42-0P, Cobalt lithium manganese nickel oxide (Co0.4Li1.03Mn0.45Ni0.1504)  
341030-44-2P, Cobalt lithium manganese nickel oxide  
(Co0.23Li1.03Mn0.68Ni0.0904) 341030-46-4P, Cobalt lithium manganese nickel oxide (Co0.18Li1.03Mn0.53Ni0.2904) 341030-48-6P, Cobalt lithium nickel oxide (Co0.75Li1.1Ni0.2504) 341030-50-0P, Lithium manganese nickel oxide (Li0.95Mn0.75Ni0.2504) 341030-54-4P, Lithium manganese nickel oxide (Li0.3Mn0.75Ni0.2504.02) 341030-56-6P, Lithium manganese nickel oxide (Li1.03Mn0.75Ni0.2504.06) 341030-58-8P, Lithium manganese nickel oxide (Li1.03Mn0.75Ni0.2503.95) 341030-60-2P 341030-62-4P  
341030-64-6P 341030-66-8P, Iron lithium manganese oxide  
(Fe0.25Li1.03Mn0.7504) 341030-68-0P 341030-71-5P  
341030-73-7P 341030-75-9P, Copper lithium manganese oxide  
(Cu0.25Li1.03Mn0.7504) 341030-77-1P 341030-78-2P  
341030-80-6P 341030-82-8P, Lithium manganese zinc oxide  
(Li1.03Mn0.75Zn0.2504) 341030-84-0P 341030-86-2P 341030-88-4P  
341030-90-8P, Cerium lithium manganese oxide (Ce0.25Li1.03Mn0.7504)  
341030-92-0P 341030-94-2P 341030-96-4P  
341030-99-7P, Lithium manganese vanadium oxide (Li1.03Mn0.75V0.2504)  
341031-01-4P 341031-03-6P 341031-05-8P 341031-07-0P, Lithium manganese tin oxide (Li1.03Mn0.75Sn0.2504) 341031-09-2P  
341031-11-6P 341031-13-8P 341031-14-9P, Chromium lithium manganese oxide (Cr0.25Li1.03Mn0.7504) 341031-15-0P  
341031-16-1P 341031-17-2P 341031-18-3P 341031-19-4P  
341031-20-7P 341031-21-8P 341031-22-9P 341031-23-0P  
RL: DEV (Device component use); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); USES (Uses)  
(Li Ni Mn Co oxide cathode for Li battery with high energy d.  
and high-temperature cycle performance)

AB The material is made of  $\text{Li}_{1-a}(\text{Ni}_{1-b-c-d}\text{Mn}_b\text{Co}_c\text{Md}_d)^{2-e}$  (e = element added in trace amount; a = -0.15 to 0.10; b = 0.40-0.80; c = 0-0.30; d = 0-0.55; e = -0.2 to 0.2; f = -0.2 to 0.5; 1 - b - c - d ≤ 0.3) and does not show potential inflection or plateau in 3.5-4.5 V region of charge-discharge curve described for 3.5-5.2 V with Li anode. The battery using the material has high energy d. and high-temperature cycle performance.

L3 ANSWER 105 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2000:394403 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 133:153161  
TITLE: In-situ X-ray diffraction of layered LiCoO<sub>2</sub>-type cathode materials  
AUTHOR(S): Rodriguez, Mark A.; Ingersoll, David; Doughty, Daniel H.  
CORPORATE SOURCE: Sandia National Laboratories, Albuquerque, NM,  
87185-1405, USA  
SOURCE: Proceedings - Electrochemical Society (2000),  
99-24(Intercalation Compounds for Battery Materials),  
85-92  
CODEN: PESODO; ISSN: 0161-6374  
PUBLISHER: Electrochemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
TI In-situ X-ray diffraction of layered LiCoO<sub>2</sub>-type cathode materials  
IT Battery cathodes  
Crystal structure  
X-ray diffraction

(in-situ X-ray diffraction of layered LiCoO<sub>2</sub>-type cathode materials)  
IT 113066-89-0, Cobalt lithium nickel oxide coo.2lini0.8o2  
287170-93-8  
RL: DEV (Device component use); USES (Uses)  
(in-situ X-ray diffraction of layered LiCoO<sub>2</sub>-type cathode materials)  
AB We have investigated LiNi0.8Co0.2O<sub>2</sub> (Sumitomo) and  
LiNi<sub>5</sub>/8Co<sub>1</sub>/4Mn<sub>1</sub>/16Al<sub>1</sub>/16O<sub>2</sub> (Sandia chemical preparation method) cathode powders  
via in-situ X-ray Diffraction and Cyclic Voltammetry using a "coffee-bag"  
type electrochem. cell. Both cathode materials did not show a monoclinic  
distortion during de-intercalation but sustained the hexagonal structure  
up to 4.3 V. The doping of Co into the LiNiO<sub>2</sub> structure appears to  
stabilize this lattice as the hexagonal structure over the full range of  
charging (up to 4.3 V). The LiNi<sub>5</sub>/8Co<sub>1</sub>/4Mn<sub>1</sub>/16Al<sub>1</sub>/16O<sub>2</sub> cathode material  
exhibited a 160 mAh/g capacity (to 4.1 V) on its 1st cycle, while  
displayed a much smaller volume change (as compared to LiNi0.8Co0.2O<sub>2</sub>)  
during de-intercalation. This reduced overall volume change (2.5 vol%) may  
have important implications for cycle life of this material.  
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 106 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2000:362747 CAPLUS <> LOGINID::20080630>>  
DOCUMENT NUMBER: 133:7013  
TITLE: Cathodes for secondary lithium battery  
INVENTOR(S): Matsubara, Yukio; Ueda, Masami; Kikutani, Kazuhiko  
PATENT ASSIGNEE(S): Fuji Chemical Industry Co., Ltd., Japan  
Jpn. Kokai Tokkyo Koho, 14 pp.  
SOURCE: CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000149923	A	20000530	JP 1998-312817	19981104
PRIORITY APPLN. INFO.:			JP 1998-312817	19981104
TI Cathodes for secondary lithium battery				
IT Battery cathodes (Li Ni oxide containing Co, Al, Mn, and B for secondary Li battery cathodes)				
IT Secondary batteries (lithium; Li Ni oxide containing Co, Al, Mn, and B for secondary Li battery cathodes)				
IT 270918-89-3P	270918-90-6P	270918-91-7P	270918-92-8P	
270918-93-9P	270918-94-0P	270918-95-1P		
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses) (Li Ni oxide containing Co, Al, Mn, and B for secondary Li battery cathodes)				
AB The title cathode contains Liy(Ni <sub>1-(a+b+c)</sub> Co <sub>a</sub> Al <sub>b</sub> Mn <sub>c</sub> ) <sub>1-d</sub> B <sub>d</sub> O <sub>2</sub> (y = 0.9-1.3; 0.1 < (a + b + c) ≤ 0.3; 0.01 < a ≤ 0.2; 0.01 < b ≤ 0.1; 0.01 < c ≤ 0.1; d = 0-0.03). The cathode is manufactured by mixing Li compds. with Ni <sub>1-(a+b+c)</sub> Co <sub>a</sub> Al <sub>b</sub> Mn <sub>c</sub> (OH) <sub>(2+b-nz)</sub> (An) <sub>2.mH2O</sub> (I; A is n valent anion; n = 1-3; z = 0.03-0.3; 0 ≤ m < 2) in aqueous media, and firing after spraying the slurry or freeze drying at 600- 900° under oxidizing atmospheric for ≥ 4 h. The process may contain mixing I with B compds. in aqueous media before mixing with Li compds. A secondary Li battery using the cathodes is also claimed.				

L3 ANSWER 107 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:706080 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 131:312432  
 TITLE: Cathode active mass for secondary lithium  
 batteries and batteries using them  
 INVENTOR(S): Miyashita, Takahiro; Kitamura, Hajime; Yamato, Koji;  
 Ota, Satoshi  
 PATENT ASSIGNEE(S): Chuo Denki Kogyo Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11307094	A	19991105	JP 1998-109746	19980420
PRIORITY APPLN. INFO.:			JP 1998-109746	19980420
TI Cathode active mass for secondary lithium batteries and batteries using them				
IT Battery cathodes (Li mixed oxides containing Ni, Mn, and Co for cathodes in batteries)				
IT Secondary batteries (lithium; Li mixed oxides containing Ni, Mn, and Co for cathodes in batteries)				
IT Alkali metals, uses Alkaline earth metals Group IIB elements Group IIIA elements Group IVA elements Transition metals, uses				
RL: DEV (Device component use); USES (Uses) (mixed oxides containing; Li mixed oxides containing Ni, Mn, and Co for cathodes in batteries)				
IT 247565-29-3, Cobalt lithium manganese nickel oxide (Co0.15Li1.05Mn0.2Ni0.65O2) 247565-30-6, Cobalt lithium manganese nickel oxide (Co0.17Li0.9Mn0.04Ni0.79O2) 247565-32-8, Cobalt lithium manganese nickel oxide (Co0.17Li0.92Mn0.04Ni0.79O2) 247565-33-9, Cobalt lithium manganese nickel oxide (Co0.17Li0.94Mn0.04Ni0.79O2) 247565-34-0, Cobalt lithium manganese nickel oxide (Co0.17Li0.95Mn0.04Ni0.79O2) 247565-35-1, Cobalt lithium manganese nickel oxide (Co0.17Li0.98Mn0.04Ni0.79O2) 247565-36-2, Cobalt lithium manganese nickel oxide (Co0.17LiMn0.04Ni0.79O2) 247565-37-3, Cobalt lithium manganese nickel oxide (Co0.17Li1.08Mn0.04Ni0.79O2) 247565-38-4, Cobalt lithium manganese nickel oxide (Co0.17Li1.15Mn0.04Ni0.79O2) 247565-39-5, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.02Ni0.79O2) 247565-40-8, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.08Ni0.79O2) 247565-41-9, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.3Ni10.5O2) 247565-42-0, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.4Ni0.4O2) 247565-43-1, Lithium manganese nickel oxide (Li1.05Mn0.3Ni10.7O2) 247565-45-3, Cobalt lithium manganese nickel oxide (Co0.03Li1.05Mn0.3Ni10.68O2) 247565-47-5, Cobalt lithium manganese nickel oxide (Co0.05Li1.05Mn0.3Ni10.65O2) 247565-48-6, Cobalt lithium manganese nickel oxide (Co0.08Li1.05Mn0.3Ni10.63O2) 247565-50-0, Cobalt lithium manganese nickel oxide (Co0.1Li1.05Mn0.3Ni10.6O2) 247565-51-1, Cobalt lithium manganese nickel oxide (Co0.15Li1.05Mn0.3Ni10.55O2) 247565-52-2, Cobalt lithium manganese nickel oxide (Co0.25Li1.05Mn0.3Ni10.45O2) 247565-53-3 247565-54-4 247565-55-5 247565-57-7 247565-59-9 247565-61-3 247565-63-5 247565-65-7 247565-66-8 247565-69-1 247565-71-5				

247565-73-7 247565-76-0 247565-77-1 247565-78-2  
247565-79-3 247565-80-6 247565-81-7 247565-82-8

RL: DEV (Device component use); USES (Uses)

(Li mixed oxides containing Ni, Mn, and Co for cathodes in batteries)

AB The title cathode active mass comprises  $\text{Li}-\text{aNi1-b-c-dMnbCocMd02}$  ( $\text{M}$  is an addnl. element;  $a = -0.15$  to  $0.10$ ;  $b = 0.02$ - $0.45$ ;  $c = 0$ - $0.50$ ;  $d = 0$ - $0.20$ ) and shows remained Li amount  $x = 0.20$ - $0.30$  after Li desorption and heat generation 0-30% while heating at 175-300° vs. that of  $\text{Li}_{x}\text{NiO}_2$ . Secondary batteries using the cathodes are also claimed. The active mass provides high capacity, long cycle life, low cost, and good thermal stability.

L3 ANSWER 108 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 1999:163152 CAPLUS <>LOGINID::20080630>>  
DOCUMENT NUMBER: 130:239957  
TITLE: Secondary lithium battery having coated mixed oxide particles as cathode active mass  
INVENTOR(S): Sunagawa, Takuya; Ohshita, Ryuji; Watanabe, Hiroshi; Noma, Toshiyuki; Nishio, Koji  
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11067209	A	19990309	JP 1997-247779	19970827
PRIORITY APPLN. INFO.:			JP 1997-247779	19970827
TI	Secondary lithium battery having coated mixed oxide particles as cathode active mass			
IT	Battery cathodes (Li battery having coated mixed oxide particles as cathode active mass for storage stability in charging state)			
IT	12190-79-3P, Cobalt lithium oxide ( $\text{CoLiO}_2$ ) 118557-79-2P, Cobalt iron lithium oxide ( $\text{Co0.9Fe0.1LiO}_2$ ) 134398-46-2P, Cobalt lithium tungsten oxide ( $\text{Co0.9LiW0.1O}_2$ ) 134398-47-3P, Cobalt lithium manganese oxide ( $\text{Co0.9LiMn0.1O}_2$ ) 147521-48-0P, Cobalt lithium vanadium oxide ( $\text{Co0.9LiV0.1O}_2$ ) 150030-49-2P, Cobalt copper lithium oxide ( $\text{Co0.9Cu0.1LiO}_2$ ) 154471-92-8P, Cobalt lithium borate oxide ( $\text{Co0.9Li(BO}_3\text{)0.1O1.7}$ ) 163219-55-4P, Cobalt lithium oxide silicate ( $\text{Co0.9LiO1.6(SiO}_4\text{)0.1}$ ) 199923-74-5P, Aluminum cobalt lithium oxide ( $\text{Al0.1Co0.9LiO}_2$ ) 221332-84-9P, Cobalt gallium lithium oxide ( $\text{Co0.9Ga0.1LiO}_2$ ) 221332-94-1P, Chromium cobalt lithium oxide ( $\text{Cr0.1Co0.9LiO}_2$ ) 221333-00-2P, Cobalt lithium zinc oxide ( $\text{Co0.9LiZn0.1O}_2$ )			
IT	RL: DEV (Device component use); MOA (Modifier or additive use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses) (Li battery having coated mixed oxide particles as cathode active mass for storage stability in charging state)			
IT	193214-71-0P, Aluminum cobalt lithium manganese nickel oxide ( $\text{Al0.1Co0.2LiMn0.1NiO}_2$ )			
IT	RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses) (Li battery having coated mixed oxide particles as cathode active mass for storage stability in charging state)			
AB	In the battery, the cathode active mass comprises base particles			

having a composition  $\text{Li}_{\alpha} \text{CobMncMldNi}_{1-(b+c+d)} \text{O}_2$  ( $M_1 = \text{B}, \text{Al}, \text{Si}, \text{Fe}, \text{V}, \text{Cr}, \text{Cu}, \text{Zn}, \text{Ga}$ , and/or  $\text{W}$ ;  $0 < \alpha < 1.2$ ;  $0 \leq b < 0.5$ ;  $0.05 \leq c < 0.4$ ;  $0 \leq d < 0.4$ ;  $0.15 \leq b + c + d < 0.7$ ) coated with a mixed oxide having a composition  $\text{LieCol-fM2fO}_2$  ( $M_2 = \text{Mn}, \text{B}, \text{Al}, \text{Si}, \text{Fe}, \text{V}, \text{Cr}, \text{Cu}, \text{Zn}, \text{Ga}$ , and/or  $\text{W}$ ;  $0 < e < 1.2$ ;  $0 \leq f < 0.5$ ). Since the base particles have high structural stability and the coating layer improves storage stability of the particles in charging state., the battery shows good cycling performance and high storage stability in charging state.

L3 ANSWER 109 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1998:703437 CAPLUS <> LOGINID::20080630>>  
 DOCUMENT NUMBER: 129:304531  
 ORIGINAL REFERENCE NO.: 129:62077a,62080a  
 TITLE: Cathode material for use in nonaqueous-electrolyte battery, its preparation, and nonaqueous-electrolyte battery having cathode prepared from this material  
 INVENTOR(S): Sunagawa, Takuuya; Watanabe, Hiroshi; Ohshita, Ryuji; Fujimoto, Masahisa; Nohma, Toshiyuki; Nishio, Koji  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 22 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 872450	A1	19981021	EP 1998-106725	19980414
EP 872450	B1	20031105		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 10289731	A	19981027	JP 1997-97239	19970415
JP 11025957	A	19990129	JP 1997-230145	19970827
JP 3561607	B2	20040902		
PRIORITY APPLN. INFO.:				
TI	Cathode material for use in nonaqueous-electrolyte battery, its preparation, and nonaqueous-electrolyte battery having cathode prepared from this material		JP 1997-97239	A 19970415
IT	Secondary batteries (lithium, lithium-ion; performance of)		JP 1997-117341	A 19970508
IT	Battery cathodes (lithium-metal compound oxide for use in nonaq.-electrolyte)		JP 1997-230145	A 19970827
IT	146956-42-5P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.4}\text{LiMn}_{0.2}\text{Ni}_{0.402}$ ) 176206-89-6P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.3}\text{LiMn}_{0.2}\text{Ni}_{0.502}$ ) 179802-94-9P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.05}\text{LiMn}_{0.05}\text{Ni}_{0.902}$ ) 179802-96-1P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.2}\text{LiMn}_{0.1}\text{Ni}_{0.702}$ ) 190902-70-6P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.1}\text{LiMn}_{0.05}\text{Ni}_{0.8502}$ ) 191024-83-6P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.4}\text{LiMn}_{0.1}\text{Ni}_{0.502}$ ) 193214-71-0P 193215-05-3P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.2}\text{LiMn}_{0.2}\text{Ni}_{0.602}$ ) 193215-92-8P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.1}\text{LiMn}_{0.4}\text{Ni}_{0.502}$ ) 214473-55-9P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.01}\text{LiMn}_{0.09}\text{Ni}_{0.902}$ ) 214473-56-0P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.09}\text{LiMn}_{0.01}\text{Ni}_{0.902}$ ) 214473-57-1P 214473-59-3P 214473-60-6P 214473-63-9P 214473-65-1P 214473-66-2P 214473-68-4P 214473-69-5P 214473-70-8P 214473-71-9P 214473-72-0P			

214473-73-1P 214473-74-2P, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.45</sub>LiMn<sub>0.05</sub>Ni<sub>0.502</sub>) 214473-75-3P, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.1</sub>LiMn<sub>0.85</sub>Ni<sub>0.0502</sub>) 214473-76-4P, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.9</sub>LiMn<sub>0.05</sub>Ni<sub>0.0502</sub>) 214473-77-5P 214473-78-6P  
 214473-79-7P 214473-80-0P 214473-81-1P  
 214473-82-2P 214473-85-5P 214473-86-6P  
 214473-87-7P 214473-88-8P  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)  
     (cathode material for use in nonaq.-electrolyte battery and its preparation)  
 IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,  
 Diethyl carbonate 616-38-6, Dimethyl carbonate 14283-07-9, Lithium fluoroborate 21324-40-3, Phosphate(1-), hexafluoro-, lithium 132843-44-8, Lithium bis(pentafluoroethylsulfonyl)imide  
 RL: DEV (Device component use); USES (Uses)  
     (cathode material for use in nonaq.-electrolyte battery containing)  
 AB The title battery includes an anode, a nonaq.-electrolyte, and a cathode using a Li-metal compound oxide as a cathode, which contains at least Ni, Co, and Mn, and has a peak with a full width at half maximum of  $\leq 0.22^\circ$  at  $2\theta = 18.71 \pm 0.25^\circ$  as measured by the powder x-ray diffraction anal. using a Cu K $\alpha$  x-ray source or employing a cathode material composed of a Li-metal compound oxide which contains at least Ni, Co and Mn, and a nonaq. electrolyte which includes a solvent containing ethylene carbonate and a solute containing  $\geq 1$  type of F-containing compound  
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 110 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1998:505297 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 129:191546  
 ORIGINAL REFERENCE NO.: 129:38873a,38876a  
 TITLE: Nonaqueous-electrolyte alkali metal secondary batteries using alkali metal nickel mixed oxide boride cathodes  
 INVENTOR(S): Ikawa, Akiko; Tsuoka, Shigeo; Komatsu, Yoshimi; Yamauchi, Hisako; Yoshikawa, Masanori; Muranaka, Kiyoishi  
 PATENT ASSIGNEE(S): Hitachi, Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 10208743	A	19980807	JP 1997-15031	19970129
PRIORITY APFLN. INFO.:			JP 1997-15031	19970129
TI	Nonaqueous-electrolyte alkali metal secondary batteries using alkali metal nickel mixed oxide boride cathodes			
IT	Battery cathodes			
Safety	(nonaq.-electrolyte alkali metal secondary batteries using alkali metal Ni Al mixed oxide cathodes)			
IT	7439-93-2, Lithium, uses			
RL: DEV (Device component use); TEM (Technical or engineered material				

use); USES (Uses)  
 (batteries; nonaq.-electrolyte alkali metal secondary  
 batteries using alkali metal Ni Al mixed oxide cathodes)

IT 211755-91-8, Cobalt lithium nickel borate oxide (Co<sub>0.3</sub>Li<sub>0.05-</sub>  
 1.2Ni<sub>0.69</sub>(BO<sub>3</sub>)<sub>0.0101.97</sub>) 211755-93-0, Cobalt lithium manganese nickel  
 oxide (Co<sub>0.1</sub>Li<sub>0.05-1.2Mn<sub>0.01</sub>Ni<sub>0.8901.99</sub></sub>) 211755-94-1 211755-96-3,  
 Lithium manganese nickel borate oxide (Li<sub>0.05-</sub>  
 1.2Mn<sub>0.3</sub>Ni<sub>0.69</sub>(BO<sub>3</sub>)<sub>0.0101.97</sub>) 211755-98-5, Lithium magnesium manganese  
 nickel oxide (Li<sub>0.05-1.2Mg<sub>0.01</sub>Mn<sub>0.1</sub>Ni<sub>0.8901.99</sub></sub>) 211755-99-6  
 211756-01-3 211756-03-5 211756-05-7 211756-06-8  
 211756-07-9 211756-10-4

RL: DEV (Device component use); USES (Uses)  
 (cathode active mass; nonaq.-electrolyte alkali metal secondary  
 batteries using alkali metal Ni Al mixed oxide cathodes)

AB The title batteries comprise AwMgvNixMyBzO<sub>2</sub> (A = alkali metal; M  
 = Mn, Co; w = 0.05-1.2; v = 0.001-0.02; x = 0.6-0.95; y = 0.05-0.4; z =  
 0.001-0.02) as cathode active mass and electrolytes containing Li salts. The  
 cathodes have high capacity and the batteries show long cycling  
 life and decreased overvoltage during charging and discharging and are  
 safety.

L3 ANSWER 111 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1998:493959 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 129:163986  
 ORIGINAL REFERENCE NO.: 129:33305a,33308a  
 TITLE: Nonaqueous-electrolyte lithium secondary  
 batteries showing excellent cycling  
 characteristics  
 INVENTOR(S): Isakawa, Takuya; Fujimoto, Hiroyuki; Watanabe,  
 Hiroshi; Noma, Toshiyuki; Nishio, Akiji  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10199525	A	19980731	JP 1997-5136	19970116
JP 3281829	B2	20020513		
PRORITY APPLN. INFO.: JP 1997-5136				19970116
TI Nonaqueous-electrolyte lithium secondary batteries showing excellent cycling characteristics				
IT Battery cathodes (Li secondary batteries with cathodes containing substituted Li(Ni,Co,Mn)O <sub>2</sub> )				
IT 193215-20-2P 211238-69-6P, Cobalt lithium nickel oxide (Co <sub>0.04</sub> Li <sub>10.9502</sub> ) 211238-76-5P, Lithium manganese nickel oxide (LiMn <sub>0.04</sub> Ni <sub>0.9502</sub> ) 211238-86-7P, Aluminum lithium nickel oxide (Al <sub>0.04</sub> Li <sub>10.9502</sub> ) 211238-94-7P 211239-01-9P 211239-08-6P 211239-14-4P 211239-20-2P 211239-28-0P 211239-33-7P 211239-42-8P 211239-50-8P 211239-57-5P 211239-60-0P 211239-66-6P 211239-71-3P 211239-75-7P 211239-77-9P 211239-82-6P 211239-88-2P 211239-93-9P 211239-99-5P 211240-04-9P 211240-08-3P 211240-14-1P 211240-19-6P 211240-25-4P 211240-30-1P 211240-34-5P 211240-39-0P				

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)  
 (cathodes; Li secondary batteries with cathodes containing substituted Li<sub>(Ni,Co,Mn)O<sub>2</sub></sub>)

AB The title batteries use cathodes containing  $\text{Li}_{\text{a}}\text{Co}_{\text{b}}\text{Mn}_{\text{c}}\text{Mn}_{\text{d}}\text{Ni}_{\text{l}}-(\text{b}+\text{c}+\text{d})\text{O}_2$  ( $\text{M} = \text{Y}, \text{B}, \text{Al}, \text{Si}, \text{Ti}, \text{Fe}, \text{V}, \text{Cr}, \text{Cu}, \text{Zn}, \text{Ga}, \text{Ge}, \text{Rb}, \text{Rh}, \text{Pd}, \text{W}; 0 < \text{a} < 1.2; 0 < \text{b} < 0.5; 0 < \text{c} < 0.4; 0 < \text{d} < 0.4; 0 < \text{b} + \text{c} + \text{d} < 0.5$ ). By substituting a part of Ni in  $\text{Li}_{\text{a}}\text{Co}_{\text{b}}\text{Mn}_{\text{c}}\text{Mn}_{\text{d}}\text{Ni}_{\text{l}}-(\text{b}+\text{c})\text{O}_2$  with M, undesired elution of Mn into the electrolytes is suppressed.

L3 ANSWER 112 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1997:543493 CAPLUS <>LOGINID::20080630>>  
 DOCUMENT NUMBER: 127:138098  
 ORIGINAL REFERENCE NO.: 127:26597a,26600a  
 TITLE: Cathode active material for secondary lithium battery, manufacture of this material, and secondary lithium battery  
 INVENTOR(S): Aoki, Takashi; Nagata, Mikito; Tsukamoto, Junichi  
 PATENT ASSIGNEE(S): Japan Storage Battery Company Limited, Japan  
 SOURCE: Eur. Pat. Appl., 13 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 782206	A1	19970702	EP 1996-120921	19961227
EP 782206	B1	20030416		
R: DE, FR, GB				
JP 09237631	A	19970909	JP 1996-342516	19961205
JP 3897387	B2	20070322		
CN 1156910	A	19970813	CN 1996-114088	19961227
US 5718989	A	19980217	US 1996-774226	19961227
US 5795558	A	19980818	US 1997-947494	19971009
PRIORITY APPLN. INFO.:			JP 1995-353033	A 19951229
			JP 1996-342516	A 19961205
			US 1996-774226	A3 19961227

TI Cathode active material for secondary lithium battery, manufacture of this material, and secondary lithium battery  
 IT Battery cathodes  
 (active material for secondary lithium)  
 IT 12031-65-1P, Lithium nickel oxide (LiNiO<sub>2</sub>) 113066-89-0P, Cobalt lithium nickel oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) 116327-69-6P, Cobalt lithium nickel oxide (Co<sub>0.1</sub>LiNi<sub>0.9</sub>O<sub>2</sub>) 143623-49-8P, Cobalt lithium nickel oxide (Co<sub>0.25</sub>LiNi<sub>0.75</sub>O<sub>2</sub>) 143623-51-2P, Cobalt lithium nickel oxide (Co<sub>0.15</sub>LiNi<sub>0.85</sub>O<sub>2</sub>) 144973-42-2P, Lithium manganese nickel oxide (LiMn<sub>0.3</sub>Ni<sub>0.7</sub>O<sub>2</sub>) 149887-20-7P, Lithium manganese nickel oxide (LiMn<sub>0.1</sub>Ni<sub>0.9</sub>O<sub>2</sub>) 163596-49-4P, Lithium manganese nickel oxide (LiMn<sub>0.2</sub>Ni<sub>0.8</sub>O<sub>2</sub>) 164175-46-6P, Aluminum lithium nickel oxide (Al<sub>0.05</sub>LiNi<sub>0.9</sub>O<sub>2</sub>) 164175-47-7P, Aluminum lithium nickel oxide (Al<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) 172484-40-1P, Aluminum lithium nickel oxide (Al<sub>0.1</sub>LiNi<sub>0.9</sub>O<sub>2</sub>) 179186-44-8P, Lithium manganese nickel oxide (LiMn<sub>0.4</sub>Ni<sub>0.6</sub>O<sub>2</sub>) 179802-95-0P, Cobalt lithium manganese nickel oxide (Co<sub>0.1</sub>LiMn<sub>0.1</sub>Ni<sub>0.8</sub>O<sub>2</sub>) 179802-96-1P, Cobalt lithium manganese nickel oxide (Co<sub>0.2</sub>LiMn<sub>0.1</sub>Ni<sub>0.7</sub>O<sub>2</sub>) 179802-96-3P, Aluminum lithium nickel oxide (Al<sub>0.15</sub>LiNi<sub>0.85</sub>O<sub>2</sub>) 193214-22-1P, Aluminum cobalt lithium nickel oxide (Al<sub>0.05</sub>Co<sub>0.1</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) 193214-24-3P, Aluminum cobalt lithium nickel oxide (Al<sub>0.05</sub>Co<sub>0.15</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) 193214-25-4P, Aluminum cobalt lithium nickel oxide (Al<sub>0.05</sub>Co<sub>0.2</sub>LiNi<sub>0.7</sub>O<sub>2</sub>) 193214-27-6P, Aluminum cobalt

lithium nickel oxide (Al<sub>0.05</sub>Co<sub>0.25</sub>LiNiO<sub>0.702</sub>) 193214-33-4P, Aluminum cobalt lithium nickel oxide (Al<sub>0.1</sub>Co<sub>0.1</sub>LiNiO<sub>0.802</sub>) 193214-37-8P, Aluminum cobalt lithium nickel oxide (Al<sub>0.1</sub>Co<sub>0.15</sub>LiNiO<sub>0.7502</sub>) 193214-39-0P, Aluminum cobalt lithium nickel oxide (Al<sub>0.1</sub>Co<sub>0.2</sub>LiNiO<sub>0.702</sub>) 193214-41-4P, Aluminum cobalt lithium nickel oxide (Al<sub>0.1</sub>Co<sub>0.25</sub>LiNiO<sub>0.6502</sub>)  
193214-44-7P, Aluminum cobalt lithium nickel oxide (Al<sub>0.15</sub>Co<sub>0.1</sub>LiNiO<sub>0.7502</sub>)  
193214-45-8P, Aluminum cobalt lithium nickel oxide (Al<sub>0.15</sub>Co<sub>0.15</sub>LiNiO<sub>0.702</sub>)  
193214-46-9P, Aluminum cobalt lithium nickel oxide (Al<sub>0.15</sub>Co<sub>0.25</sub>LiNiO<sub>0.602</sub>)  
193214-47-0P, Aluminum cobalt lithium nickel oxide (Al<sub>0.2</sub>Co<sub>0.1</sub>LiNiO<sub>0.702</sub>)  
193214-48-1P, Aluminum cobalt lithium nickel oxide (Al<sub>0.2</sub>Co<sub>0.15</sub>LiNiO<sub>0.6502</sub>)  
193214-49-2P, Aluminum cobalt lithium nickel oxide (Al<sub>0.2</sub>Co<sub>0.2</sub>LiNiO<sub>0.602</sub>)  
193214-50-5P, Aluminum cobalt lithium nickel oxide (Al<sub>0.2</sub>Co<sub>0.25</sub>LiNiO<sub>0.5502</sub>)  
193214-51-6P, Aluminum cobalt lithium nickel oxide (Al<sub>0.15</sub>Co<sub>0.2</sub>LiNiO<sub>0.6502</sub>)  
193214-53-8P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.1</sub>LiMnO<sub>0.1</sub>NiO<sub>0.7502</sub>) 193214-55-0P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.2</sub>LiMnO<sub>0.1</sub>NiO<sub>0.6502</sub>) 193214-56-1P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.05</sub>LiMnO<sub>0.1</sub>NiO<sub>0.8502</sub>) 193214-57-2P  
193214-58-3P 193214-60-7P 193214-63-0P  
193214-64-1P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.1</sub>LiMnO<sub>0.1</sub>NiO<sub>0.802</sub>) 193214-66-3P 193214-69-6P  
193214-71-0P 193214-73-2P 193214-75-4P, Aluminum lithium manganese nickel oxide (Al<sub>0.15</sub>LiMnO<sub>0.1</sub>NiO<sub>0.7502</sub>)  
193214-77-6P 193214-79-8P 193214-80-1P  
193214-83-4P 193214-86-7P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.2</sub>LiMnO<sub>0.1</sub>NiO<sub>0.702</sub>) 193214-88-9P 193214-89-0P  
193214-91-4P 193214-94-7P 193215-00-8P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.1</sub>LiMnO<sub>0.2</sub>NiO<sub>0.702</sub>) 193215-03-1P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.15</sub>LiMnO<sub>0.2</sub>NiO<sub>0.6502</sub>) 193215-05-3P,  
Cobalt lithium manganese nickel oxide (Co<sub>0.2</sub>LiMnO<sub>0.2</sub>NiO<sub>0.602</sub>)  
193215-08-6P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.25</sub>LiMnO<sub>0.2</sub>NiO<sub>0.5502</sub>) 193215-11-1P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.05</sub>LiMnO<sub>0.2</sub>NiO<sub>0.7502</sub>) 193215-14-4P 193215-17-7P  
193215-20-2P 193215-23-5P 193215-24-6P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.1</sub>LiMnO<sub>0.2</sub>NiO<sub>0.702</sub>) 193215-25-7P  
193215-27-9P 193215-28-0P 193215-30-4P  
193215-32-6P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.15</sub>LiMnO<sub>0.2</sub>NiO<sub>0.6502</sub>) 193215-33-7P 193215-34-8P  
193215-35-9P 193215-36-0P 193215-38-2P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.2</sub>LiMnO<sub>0.2</sub>NiO<sub>0.602</sub>) 193215-41-7P  
193215-44-0P 193215-45-1P 193215-48-4P  
193215-50-8P, Cobalt lithium manganese nickel oxide (Co<sub>0.1</sub>LiMnO<sub>0.3</sub>NiO<sub>0.602</sub>)  
193215-51-9P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.15</sub>LiMnO<sub>0.3</sub>NiO<sub>0.5502</sub>) 193215-53-1P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.2</sub>LiMnO<sub>0.3</sub>NiO<sub>0.502</sub>) 193215-54-2P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.25</sub>LiMnO<sub>0.3</sub>NiO<sub>0.4502</sub>) 193215-56-4P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.05</sub>LiMnO<sub>0.3</sub>NiO<sub>0.6502</sub>) 193215-58-6P  
193215-60-0P 193215-62-2P 193215-64-4P  
193215-66-6P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.1</sub>LiMnO<sub>0.3</sub>NiO<sub>0.602</sub>) 193215-69-9P 193215-71-3P  
193215-73-5P 193215-74-6P 193215-75-7P, Aluminum lithium manganese nickel oxide (Al<sub>0.15</sub>LiMnO<sub>0.3</sub>NiO<sub>0.5502</sub>)  
193215-77-9P 193215-79-1P 193215-82-6P  
193215-83-7P 193215-84-8P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.2</sub>LiMnO<sub>0.3</sub>NiO<sub>0.502</sub>) 193215-85-9P 193215-87-1P  
193215-88-2P 193215-89-3P 193215-92-8P, Cobalt lithium manganese nickel oxide (Co<sub>0.1</sub>LiMnO<sub>0.4</sub>NiO<sub>0.502</sub>)  
193215-94-0P, Cobalt lithium manganese nickel oxide (Co<sub>0.15</sub>LiMnO<sub>0.4</sub>NiO<sub>0.4502</sub>) 193215-96-2P,  
Cobalt lithium manganese nickel oxide (Co<sub>0.2</sub>LiMnO<sub>0.4</sub>NiO<sub>0.402</sub>)  
193215-97-3P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.25</sub>LiMnO<sub>0.4</sub>NiO<sub>0.3502</sub>) 193215-98-4P, Aluminum lithium manganese nickel oxide  
(Al<sub>0.05</sub>LiMnO<sub>0.4</sub>NiO<sub>0.5502</sub>) 193216-00-1P 193216-02-3P

193216-03-4P 193216-05-6P 193216-08-9P, Aluminum  
 lithium manganese nickel oxide (Al<sub>0.1</sub>LiMn<sub>0.4</sub>Ni<sub>0.502</sub>) 193216-10-3P  
 193216-13-6P 193216-16-9P 193216-18-1P  
 193216-21-6P, Aluminum lithium manganese nickel oxide  
 (Al<sub>0.15</sub>LiMn<sub>0.4</sub>Ni<sub>0.4502</sub>) 193216-24-9P 193216-26-1P  
 193216-30-7P 193216-32-9P 193216-34-1P, Aluminum  
 lithium manganese nickel oxide (Al<sub>0.2</sub>LiMn<sub>0.4</sub>Ni<sub>0.402</sub>) 193216-36-3P  
 193216-38-5P 193216-40-9P 193216-42-1P  
 RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)  
 (cathode active material for secondary lithium battery)

AB The material is a complex oxide LiNi<sub>1-p-q-r</sub>Cop<sub>m</sub>Al<sub>r</sub>O<sub>2</sub>, where q  
 $\leq 0.3$ , p  $\leq 0.25$ , and 0 < r  $\leq 0.15$ ; q = 0, p = 0.15-0.25,  
 $0 < r \leq 0.15$ ; or 0 < q  $\leq 0.3$ , p  $\leq 0.25$ , and 0 < r  
 $\leq 0.15$  with p + q  $\leq 0.4$ . The material is prepared from mixts.  
 of appropriate hydroxides, hydroxide oxides, and a Li compound such as LiOH,  
 Li<sub>2</sub>CO<sub>3</sub>, or LiNO<sub>3</sub>.

L3 ANSWER 113 OF 113 CAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1993:172540 CAPLUS <<LOGINID::20080630>>  
 DOCUMENT NUMBER: 118:172540  
 ORIGINAL REFERENCE NO.: 118:29531a,29534a  
 TITLE: Secondary lithium batteries  
 INVENTOR(S): Mishima, Hiromitsu  
 PATENT ASSIGNEE(S): Yuasa Battery Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04267053	A	19920922	JP 1991-50487	19910221
PRORITY APPLN. INFO.:				
TI Secondary lithium batteries			JP 1991-50487	19910221
IT Cathodes				
(battery, lithium-intercalating transition metal oxide, compns. and manufacture of)				
IT 118819-39-9, Cobalt lithium manganese oxide (co0.8limn0.2o2) 146956-41-4 146956-42-5, Cobalt lithium manganese nickel oxide (Co0.4limn0.2ni0.402) 146956-50-5, Cobalt lithium vanadium oxide				
RL: USES (Uses)				
(cathodes, lithium-intercalating, for batteries)				
IT 7439-89-6, Iron, uses 7440-32-6, Titanium, uses				
RL: USES (Uses)				
(lithium-intercalating metal oxide cathodes containing, for batteries)				
AB The batteries use LixMyM1zO2 (M = Fe, Co, and/or Ni; M1 = Ti, V, Cr, and/or Mn) for their cathodes. The batteries have long cycle life and high energy d.				